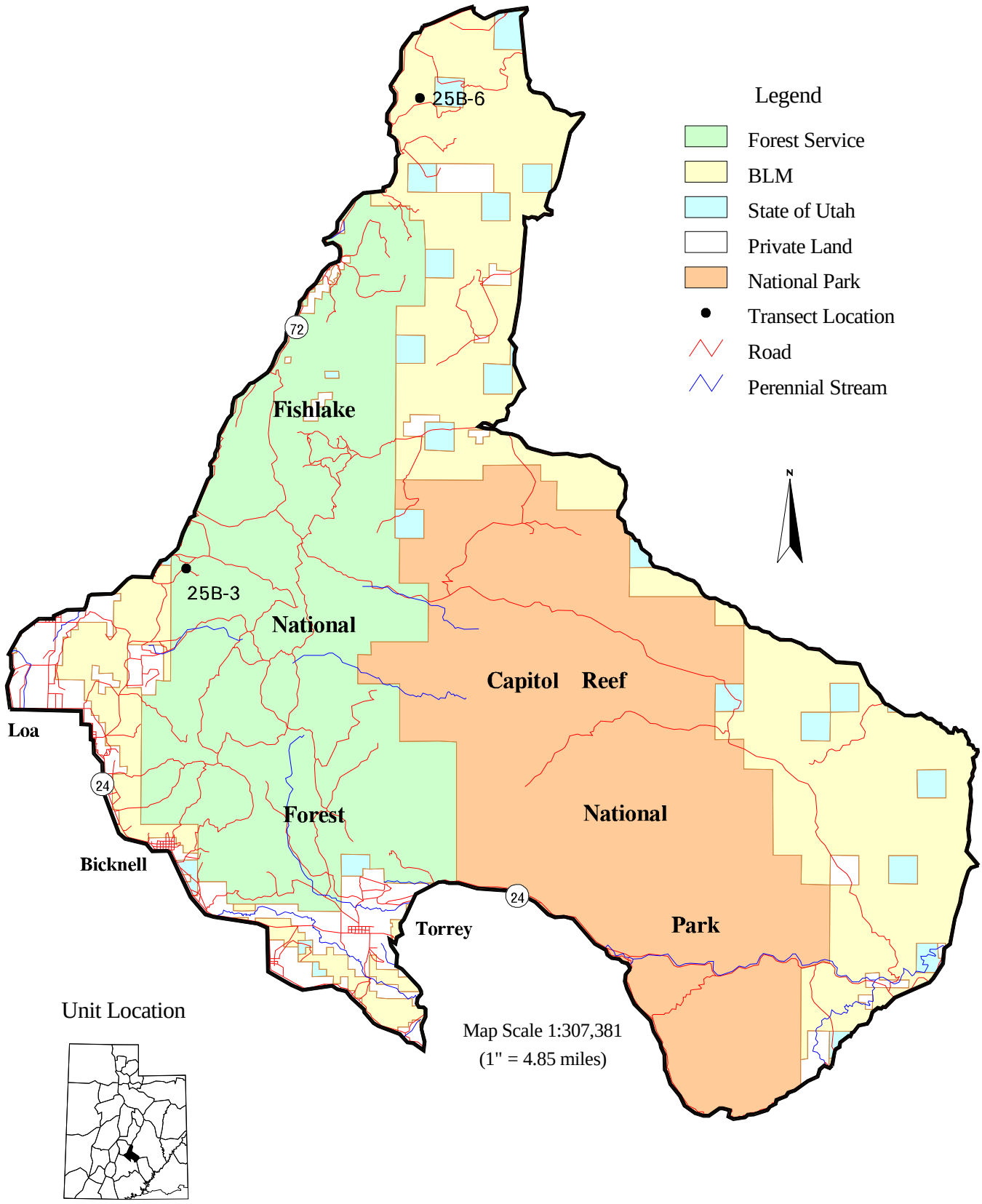
Management Unit 25B



WILDLIFE MANAGEMENT UNIT 25B (46,43) - PLATEAU, THOUSAND LAKE MOUNTAIN

Boundary Description

Wayne, Emery, and Sevier Counties - Boundary begins at Highway SR-24 and Highway SR-72; north on SR-72 to Interstate 70; east on I-70 to Cainesville road; south on this road to SR-24; west on SR-24 to SR72 and beginning point.

Unit Description

The Thousand Lake Wildlife Management unit is now part of the large management unit 25 - Plateau. This unit is divided into three sub units, Fish Lake (25A), Boulder Mountain (25C) and Thousand Lake (25A). Management unit 25B (46,43) was named after Thousand Lake Mountain, a lava-capped plateau with numerous small natural lakes. This mountain reaches an elevation of 11,295 feet and overlooks Capital Reef National Park and the desert country east of the unit. At the extreme southeastern corner of the unit is the lowest point elevationally in the herd unit at Cainesville (about 4,100 feet). The vegetative composition varies greatly throughout the unit with respect to topographical relief and elevation. Cainesville averages about 185 frost-free days and 5 to 6 inches of rainfall a year, while Thousand Lake Mountain receives 25 to 30 inches of rainfall a year and averages only 20 to 40 frost-free days. Grazing, uranium exploration, and logging are the three uses that have had the most impact on the Thousand Lakes unit.

Grazing of cattle, horses, and sheep commenced with the settlement of the region in the 1860's. The range was open to anyone and was used from the time the snow melted enough in the spring to get livestock on the mountain, until the snow drove them off in the fall. Much of the east side, especially the Solomon Basin area, was used year-round by cattle. Because of the plentiful, well-dispersed water sources, the relatively flat mountain top was also heavily grazed each summer. This overgrazing resulted in soil compaction and soil loss at water sources, erosion problems, decreased water quality, and a decrease of the valuable grass-forb component in the vegetative community until nearly monotypic shrub types remained. The Forest Service has gradually increased grazing restrictions in order to allow the range to recover. Currently many areas are beginning to show improvements, but it will take a long time for the land to recover naturally.

Uranium prospectors have also left their mark on the land. Four-wheel drive vehicles and heavy equipment tracks crisscross the unit and are still quite visible.

Stands of ponderosa pine, Douglas-fir, and Engelmann spruce are found on the mountain with many areas having been logged in the past. Fire suppression has helped to accelerate succession of the high mountain aspen-meadow parklands toward climax stands of Engelmann spruce. Canopy closure in these spruce forests nearly eliminates all understory species, resulting in a significant loss of forage production. Timber sales and prescribed burns which open up the canopy and encourage resprouting of aspen would be necessary to retain sufficient acreage of the already limited big game summer range.

Despite human impacts, portions of Thousand Lake Mountain are under consideration for wilderness designation. However, gas and oil exploration is an ongoing activity and coal deposits in the Last Chance area have drawn proposals for both underground and strip mining. Also, Highway U-72 which forms the western boundary, has been paved and will now be maintained for year-round use. This will tend to encourage more recreation and tourism through the area.

The unit has good winter range with ample protective cover, large basins, draws, and open ridges. The upper limits of the normal winter range vary from 8,400 feet at the northern boundary to 9,000 feet on the south end of the mountain. The lower normal winter range limit is between 6,000 and 7,400 feet in elevation. At present, the winter range appears ample to support the deer and elk from the Thousand Lakes unit and also

many wintering deer from the adjacent Fish Lake unit. Solomon Basin, Sage Flat, Horse Valley, Sand Flat, Paradise Flat, and Lyman Slopes are all winter concentration areas.

Several different estimates of the size of the unit's big-game ranges can be found. Many of these estimates are discussed here. Huff and Blotter (1964) conducted the original survey of the area's deer ranges and reported 90,489 acres of winter range. Jense et al. (1985) quoted this estimate but rounded it off. Mann (1985) used the same figure to arrive at an estimate of 3,800 acres that needs to be acquired from the private sector and maintained to help maintain the deer herd. In the deer herd unit management plan, Bogedahl (1983) gave markedly different estimates of the range sizes. This project planimetered the boundaries of the winter range as drawn on the original base map by Huff and Blotter to arrive at an estimate of 103,733 acres.

Huff and Blotter (1964) inventoried the vegetation on the winter range in 1963. They reported acreage and cover density for three major vegetative types. Pinyon-juniper made up 73% of the winter range with about 9% cover for desirable browse species. The sagebrush and mixed browse types accounted for 10% and 4% of the winter range and had 19% and 18% of the cover respectively for the key browse species. Ponderosa pine, with a healthy understory of antelope bitterbrush, is located along the upper edge of the winter range between Water Canyon and Sand Creek.

The condition of the spring and summer range is the current management concern. As the snow begins to recede in the spring, deer seek green grasses and forbs which are very scarce on the heavily over grazed spring ranges. At this time, the early green-up in the alfalfa and grain fields on private land near Loa, Fremont, Lyman and Torrey are very attractive to wildlife and depredation problems become serious. The DWR has been working in cooperation with the BLM and Forest Service on revegetation projects immediately above these private lands to provide spring forage and alleviate this problem. Most of the big game summer range is in fairly good condition and adequate for present needs, but it is limited in size and should be managed carefully to insure that the necessary quality and quantity of summer range is maintained in order to maintain herds at current levels. Small sage flats on top of the mountain which have been sprayed with 2,4-D, have displayed increased summer use by deer as forb and grass production increases. Limited use of these treatments in combination with logging and prescribed burns in spruce and aspen stands could be helpful in maintaining and improving the summer range.

Wildlife Management Unit Objectives

The current management plan is to achieve a target wintering population of 2,000 deer with a postseason buck to doe ratio of 15:100, with 30% of these bucks being 3 point or better. The objective for elk is to achieve a population of 4,800 wintering elk on sub units 25A - Fish Lake and 25B - Thousand Lake with a herb composition of 8 bulls to 100 cows with at least 4 of those bulls being 2 ½ years or older.

Trend Study Site Description

Forest Service, BLM, and DWR personnel met in August, 1985 to discuss range trend study’s and to select critical areas of big game range where trend should be monitored. Five sites were chosen for permanent range trend studies on the herd unit. These studies; Thousand Lake (#25B-1), Horse Valley (#25B-2), Sage Flat (#25B-3), Solomon Basin (#25B-4), and Polk Creek (#25B-5), were established in 1985. Another site, Little Deer Peak (#25B-6), has been added to the Thousand Lake unit. It originally was from a neighboring unit, but was switched to Thousand Lake unit with the latest alignment of the management unit boundaries. All of these sites were reread in 1991 and 4 of the 6 sites were read in 1994. All 6 sites were revisited in 1999.

Trend Study 25B-1-99

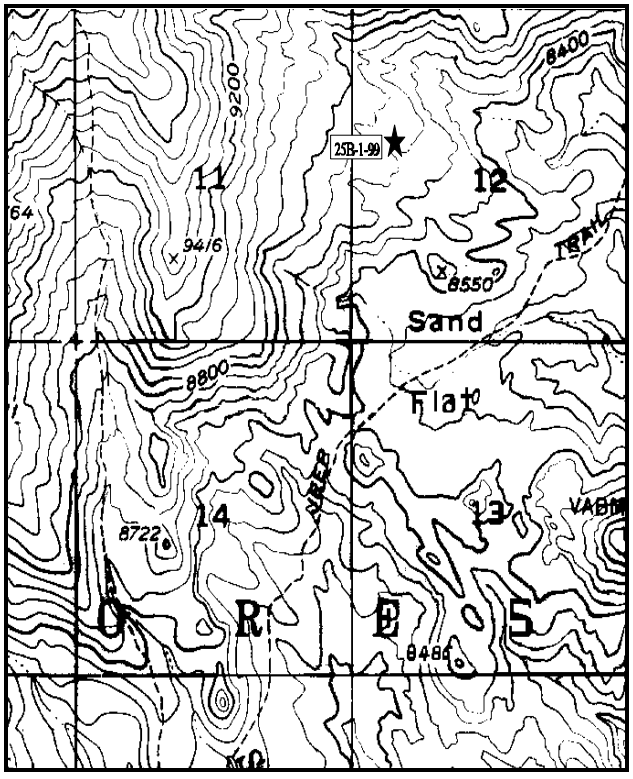
Study site name: Thousand Lake . Range type: Mixed Mountain Brush .

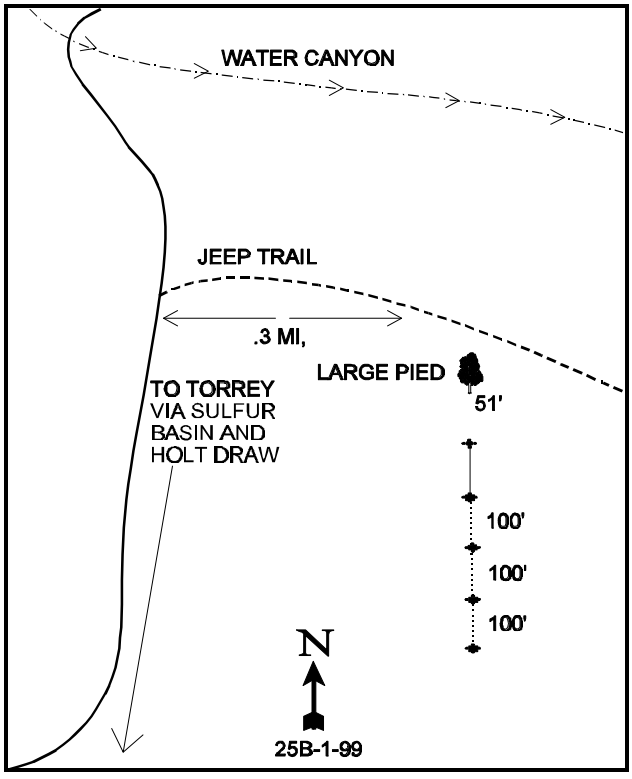
Compass bearing: frequency baseline 180°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

Take the Sand Creek-Sulfur Creek turnoff from SR 24 west of Torrey (0.35 miles from mile marker 68). Go 0.8 miles along this road to a Forest Service boundary and cattleguard. Continue 0.6 miles past two water tanks on the left. After another mile there is a road forking off to the right towards Hells Hole, continue straight through the wash. In 0.1 miles you will pass a fork, stay left on the main road which switchbacks up into the canyon (Holt Draw). Go 3.1 miles up the canyon and to the top of a ridge where a road forks to the right towards Sand Flat. Stay left on the main road (rough and rocky) and go 2.15 miles to a fork in Sulfur Basin. Take the right fork which cuts up the side of the ridge and go 1.25 miles into another basin where there is a faint road off to the right. Go 0.25 miles down this road to a large pinyon just off the right side of the road. The 0-foot baseline stake is 51 feet south of the pinyon. The stake is a rebar approximately 3 feet tall with a red browse tag #7123 attached.





Map Name: Torrey, Utah

Diagrammatic Sketch

Township 28S , Range 4E , Section 12

UTM 4249066.900 N, 462243.192 E

DISCUSSION

Trend Study No. 25B-1 (46-1)

The Thousand Lake trend study is located on the east side of Thousand Lake Mountain. The site has an aspect to the southeast with a slope of 5% to 10% and elevation of 8,600 feet. The vegetation type is mixed mountain brush. It is not unusual to see deer in this area, frequently in late summer and early fall. There is evidence that deer use the area during light to moderate winters. Pellet group data taken on site during the 1999 reading estimated 15 deer days use/acre (38 ddu/ha), 23 elk days use/acre (56 edu/ha), and 7 cow days use/acre (16 cdu/ha).

The soil appears moderately deep and quite compacted below the surface, making it difficult to drive transect stakes into the ground. Effective rooting depth was estimated at 15 inches. Soil texture was determined to be a sandy loam with a neutral pH (7.1). Soil phosphorus was low at 5.5 ppm, where values below 10 ppm could limit normal plant development and growth. There are rocks throughout the profile, although surface rock and pavement currently make up less than 12% of the ground cover. There was a high percentage of litter cover (>70%), primarily under the vegetation in the past, however currently litter cover is 45%. The north end of the transect lies in a small drainage where more abundant vegetation and litter provide good cover to help stop erosion. There is evidence of recent erosion with several shallow gullies.

The key browse species include bitterbrush, black sagebrush and mountain big sagebrush. They all have lower densities than mountain low rabbitbrush, however they are all larger and together appear to dominate the area. The black sagebrush had initially (1985) shown moderate (46%) to heavy (38%) utilization with 64% of the plants classified as decadent. Percent decadency has been declining since the first survey (64%, 56%, and 30%), however biotic potential has never been above 2% (proportion of seedlings to population) and percent young age class has never been above 7%. These numbers would indicate that black sagebrush would be declining in numbers, but not the decrease indicated by the population estimates. Some of the changes in density between 1991 and 1999 are due to the sample size being increased by more than three times. This is now giving a more accurate density estimate for the black sagebrush population. Black sagebrush currently makes up 18% of the total browse cover.

Bitterbrush currently (‘99) makes up 24% of the total browse cover, making it the most productive of the key species. Percent decadence has varied through the years from a high of 42% in 1991 to 19% currently. Its biotic potential has varied from a high of 21% in 1985 to only 1% currently. Percent young has been as high as 47% in the past, but is currently moderately high at 19%. These data would indicate an improving trend for bitterbrush. Again, one should not focus too much on the population decrease. Due to the increased sample size, the density is now more representative of the true density of bitterbrush on this site.

The lower portion of the site also supports a fairly vigorous, lightly utilized population of mountain big sagebrush. It provides 11% of the total browse cover and has good biotic potential (8%) and a moderately large young age class (26%). This would indicate an improving trend for mountain big sagebrush. Gray horsebrush is also present but contributes to less than 1% of the browse cover. It currently shows mostly light (50%) to moderate (45%) hedging. Another shrub species of note is broom snakeweed, which is found on the drier portions of the site, but not in association with the more densely occurring shrub species. It is a very young population which has experienced a significant drop in it's population (57%) in 1991. Since then its population has remained sable.

The pinyon population appears to be stable with only scattered young plants on the transect. Point quarter method data indicates that there are an estimated 87 trees/acre with an average diameter of almost 4 inches. Point quarter estimated juniper density at 20 trees/acre with an average diameter of just over 4 inches, while ponderosa’s density was 19 trees/acre with an average diameter of almost 7 inches. More mature pinyon-juniper and ponderosa pine surrounded by the site. The most common browse species on the transect

was mountain low rabbitbrush, but only provides 15% of the browse cover. It is considered an aggressive increaser with fair to poor forage value for livestock and deer. Observations indicate that deer do browse it, with over 90% of the plants being lightly browsed. The population appeared to be stable in 1985, but it actually increased by 29% in 1991. However, in 1999 the sample size was increased by more than three times and now gives a much more accurate estimated density of only about 7,520/acre.

There is a good variety of grass species present. The grasses are desirable species which provide good ground cover and forage for big game and livestock. The grasses provide 71% of the herbaceous cover, however the herbaceous component only contributes to 19% of the total vegetative cover. The abundance of forbs is quite low to be significant in terms of production, but several of the common species are known to be utilized by big game whenever they are available, especially the buckwheat species (Eriogonum spp.), penstemon, and longleaf phlox. Grasses and forbs appear to have been depleted by overgrazing in the past, but since the reduction in numbers of livestock and implementation of a rest-rotation system, the herbaceous vegetation appears to be improving it's vigor and density.

1985 APPARENT TREND ASSESSMENT

Soil was depleted from past abuse, but with increased vegetative cover and litter, the soil surface and some of the gullies appear to be stabilizing. Therefore, trend appears to be improving. Vegetative trend is similar, although the presence of several woody increaser species and the poor vigor and declining population of black sagebrush is not desirable. Continued rest from livestock grazing appears necessary to allow the range to improve and herbaceous species to recover.

1991 TREND ASSESSMENT

Soil appears to be stable, but still only in fair condition. It would show good improvement if there could be an increase in grass cover and decrease of percent bare ground to less than 10%. This would be more practical than an increase in the forb cover, which has shown very little change since the last inventory in 1985. The key browse species, black sagebrush and bitterbrush, show some interesting changes. Black sagebrush has actually increased it's density by 2% (from 11,933 to 12,133 plants per acre). Even with this high density and the extended drought, percent decadency has gone from 64 to 56%. Bitterbrush has also done well through the drought period, for it's density has increased by 55% (from 999 to 2,199 plants per acre), but percent decadency has gone from 0% to 42%. This rate of decadency could be turned around with changing precipitation patterns and an end to this extended drought. Most of the key grasses have increased quadrat and nested frequency values except for slender wheatgrass. The forbs have not changed much since the last inventory.

TREND ASSESSMENT
soil - stable
browse - up
herbaceous understory - stable to slightly improving

1999 TREND ASSESSMENT

Trend for soil would be considered stable, but still only in fair condition. The increase in percent bare ground is because the transect was lengthened four times longer than the original transect and the black sagebrush type that is sampled more, has characteristically more bare soil than the mountain big sagebrush type. The two most productive key browse species, black sagebrush and bitterbrush, show some interesting density changes, however these decreases are from the greatly increased sample size which now gives better estimates for browse species. Black sagebrush shows characteristics of a stable population, but could decline in density in the future with low biotic potential (2%) and fairly low percent young age class (7%) if there are no improvements in the future. However, percent decadence has improved from 56% down to 30% and those

classified with poor vigor have decreased from a high of 25% (1991) to 10% in 1999. The percentage of plants with moderate to heavy use has also decreased from 53% in 1991 down to 19% in 1999. Bitterbrush has also done well through the extended drought period, with improvements in percent decadency from a high of 42% in 1991 to 19% in 1999. The percent classified in the young age class are still relatively high at 19%. Most of the key grasses are stable to decreasing nested frequency values except for slender wheatgrass and needle and thread grass. The forbs have changed little, but have improved slightly since 1991. Overall, trend for herbaceous species is stable.

TREND ASSESSMENT
soil - stable
browse - stable
herbaceous understory - stable

HERBACEOUS TRENDS --
Herd unit 25B, Study no: 1

Type	Species	Nested Frequency '85	'91	'99	Quadrat Frequency '85	'91	'99	Average Cover % '99
G	Agropyron smithii	-	-	2	-	-	1	.00
G	Agropyron trachycaulum	b45	a23	ab31	20	9	15	.60
G	Bouteloua gracilis	a83	b122	ab112	36	46	46	3.45
G	Bromus inermis	b15	a1	a-	6	1	-	-
G	Carex spp.	a50	b78	a34	21	33	15	.12
G	Oryzopsis hymenoides	2	1	-	1	1	-	-
G	Poa fendleriana	a-	a-	b44	-	-	20	.76
G	Poa pratensis	b102	ab64	a51	41	26	19	.78
G	Sitanion hystrix	a24	b80	a43	12	38	18	.89
G	Stipa comata	a-	a3	b24	-	1	10	.49
G	Stipa lettermani	a19	b47	ab31	8	19	14	.46
Total for Annual Grasses		0	0	0	0	0	0	0
Total for Perennial Grasses		340	419	372	145	174	158	7.57
Total for Grasses		340	419	372	145	174	158	7.57
F	Arabis demissa	4	4	3	3	2	1	.00
F	Artemisia ludoviciana	1	1	-	1	1	-	-
F	Aster spp.	-	-	5	-	-	2	.18
F	Astragalus spp.	-	2	-	-	1	-	-
F	Cryptantha spp.	a12	a19	b49	9	8	20	.42
F	Epilobium brachycarpum (a)	-	-	1	-	-	1	.15
F	Eriogonum brevicaule	1	5	-	1	2	-	-
F	Eriogonum racemosum	b30	b29	a6	16	16	3	.06
F	Eriogonum umbellatum	a2	a-	b28	2	-	14	1.36
F	Hymenoxys richardsonii	-	3	4	-	1	3	.33
F	Linum lewisii	a-	a-	b7	-	-	3	.06

Type	Species	Nested Frequency '85	'91	'99	Quadrat Frequency '85	'91	'99	Average Cover % '99
F	Lygodesmia spp.	-	-	2	-	-	2	.03
F	Machaeranthera canescens	4	6	-	2	3	-	-
F	Penstemon comarrhenus	7	8	2	3	3	2	.16
F	Phlox longifolia	1	11	3	1	5	2	.06
F	Senecio multilobatus	$_{b}$14	$_{a}$-	$_{b}$15	6	-	6	.20
F	Unknown forb-perennial	3	-	-	1	-	-	-
F	Zigadenus paniculatus	2	-	-	1	-	-	-
Total for Annual Forbs		0	0	1	0	0	1	0.15
Total for Perennial Forbs		81	88	124	46	42	58	2.89
Total for Forbs		81	88	125	46	42	59	3.04

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 25B, Study no: 1

Type	Species	Strip Frequency '99	Average Cover % '99
B	Artemisia frigida	2	.18
B	Artemisia nova	86	8.38
B	Artemisia tridentata vaseyana	36	5.01
B	Chrysothamnus nauseosus	1	-
B	Chrysothamnus viscidiflorus lanceolatus	82	6.81
B	Cowania mexicana stansburiana	2	-
B	Eriogonum microthecum	5	.04
B	Gutierrezia sarothrae	6	.15
B	Juniperus osteosperma	1	.38
B	Leptodactylon pungens	9	.21
B	Pinus edulis	6	13.63
B	Purshia tridentata	52	11.30
B	Ribes spp.	0	-
B	Symphoricarpos oreophilus	3	.00
B	Tetradymia canescens	17	.24
Total for Browse		308	46.35

CANOPY COVER --
Herd unit 25B, Study no: 1

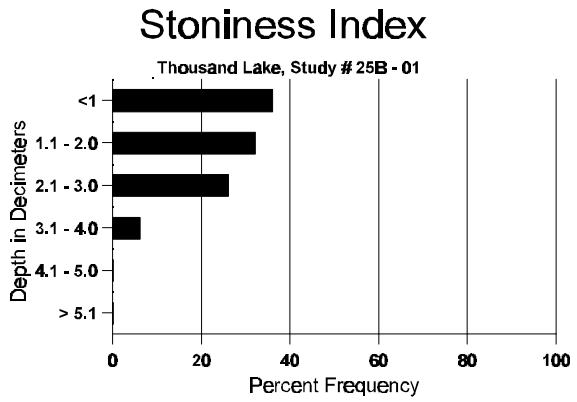
Species	Percent Cover '99
Pinus edulis	18

BASIC COVER --
Herd unit 25B, Study no: 1

Cover Type	Nested Frequency ⁞99	Average Cover % '85	'91	'99
Vegetation	298	5.25	8.50	49.81
Rock	152	7.00	5.25	8.80
Pavement	164	3.50	1.25	3.06
Litter	371	71.00	71.50	45.38
Cryptogams	20	.25	0	.38
Bare Ground	229	13.00	13.50	21.11

SOIL ANALYSIS DATA --
Herd Unit 25B, Study # 01, Study Name: Thousand Lake

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
15.0	49.2 (16.4)	7.1	68.9	13.8	17.3	1.6	5.5	105.6	0.5



PELLET GROUP DATA --
Herd unit 25B, Study no: 1

Type	Quadrat Frequency ⁞94	⁞99	Pellet Transect Days Use/Acre (ha) ⁞99
Rabbit	-	8	n/a
Elk	-	15	23 (57)
Deer	-	11	15 (37)
Cattle	-	2	7 (17)

BROWSE CHARACTERISTICS --
Herd unit 25B, Study no: 1

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia frigida																		
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	1	-	-	2	-	-	-	-	-	3	-	-	-	60	4	5	3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'85	00%	00%	00%
'91	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
'85	0	Dec:	-
'91	0		-
'99	60		-

Artemisia nova																		
S	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	3	-	-	-	-	-	6	-	-	-	120			6
Y	85	5	3	-	-	-	-	-	-	-	7	-	1	-	533			8
	91	1	2	-	-	-	-	-	-	-	3	-	-	-	200			3
	99	23	-	-	1	-	-	-	-	-	23	-	1	-	480			24
M	85	19	36	2	-	-	-	-	-	-	53	-	4	-	3800	6	10	57
	91	34	37	4	1	1	-	-	-	-	73	1	2	1	5133	6	16	77
	99	153	42	-	16	-	-	3	-	-	214	-	-	-	4280	11	19	214
D	85	5	43	66	-	-	-	-	-	-	81	-	17	16	7600			114
	91	48	47	3	1	2	-	-	-	1	60	-	3	39	6800			102
	99	65	19	-	8	4	-	4	-	-	67	-	-	33	2000			100
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	820			41

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	46%	38%	21%	+ 2%
'91	49%	04%	25%	-44%
'99	19%	00%	10%	

Total Plants/Acre (excluding Dead & Seedlings)			
'85	11933	Dec:	64%
'91	12133		56%
'99	6760		30%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	5	-	-	3	-	-	-	-	-	8	-	-	-	160			8
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	23	-	-	5	-	-	-	-	-	28	-	-	-	560			28
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	50	3	-	1	-	-	-	-	-	54	-	-	-	1080	22	29	54
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	22	1	-	1	-	-	-	-	-	24	-	-	-	480			24
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	200			10

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'85	00%	00%	00%
'91	00%	00%	00%
'99	04%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	0%
	'91	0		0%
	'99	2120		23%

Chrysothamnus nauseosus																		
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	25	26	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'85	00%	00%	00%
'91	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'99	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus lanceolatus																		
S	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	85	20	-	-	-	-	-	-	-	-	20	-	-	-	1333			20
	91	25	-	-	-	-	-	-	-	-	25	-	-	-	1666			25
	99	10	-	-	2	-	-	-	-	-	12	-	-	-	240			12
M	85	135	2	-	-	-	-	-	-	-	137	-	-	-	9133	4	4	137
	91	233	11	-	4	-	-	6	-	-	251	3	-	-	16933	3	8	254
	99	309	9	-	24	-	-	2	-	-	344	-	-	-	6880	8	14	344
D	85	48	4	5	-	-	-	-	-	-	56	-	1	-	3800			57
	91	8	10	-	-	2	-	-	-	-	14	-	-	6	1333			20
	99	14	1	-	5	-	-	-	-	-	13	-	-	6	400			20
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	03%	02%	.46%	+28%
'91	08%	00%	02%	-62%
'99	03%	00%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	14266	Dec:	27%
	'91	19932		7%
	'99	7520		5%

Cowania mexicana stansburiana																		
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	19	19	0
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	1	-	-	1	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'99	00%	00%	50%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	0%
	'91	0		0%
	'99	40		100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Eriogonum microthecum																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	2	3	-	-	-	-	-	-	-	5	-	-	-	100	9	13	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'99	38%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'99	160		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	85	6	-	-	-	-	-	-	-	-	6	-	-	-	400			6
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	91	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200	4	4	3
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	9	-	-	-	-	-	-	-	-	9	-	-	-	180	11	21	9
D	85	1	-	-	-	-	-	-	-	-	-	-	1	-	66			1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	14%	-57%
'91	00%	00%	00%	+ 0%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	466	Dec:	14%
	'91	200		0%
	'99	200		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus osteosperma																		
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	1	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'99	100%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'99	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Leptodactylon pungens																		
Y	85	4	-	-	-	-	-	-	-	-	4	-	-	-	266			4
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	85	21	-	-	-	-	-	-	-	-	21	-	-	-	1400	5	6	21
	91	1	1	-	2	-	-	1	-	-	5	-	-	-	333	5	5	5
	99	3	4	-	2	-	-	3	-	-	12	-	-	-	240	9	8	12
D	85	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	91	5	3	-	-	-	-	1	-	-	5	-	-	4	600			9
	99	1	-	-	3	-	-	1	-	-	3	-	-	2	100			5
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	-50%
'91	27%	00%	27%	-66%
'99	24%	00%	12%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	1999	Dec:	17%
	'91	999		60%
	'99	340		29%

Pinus edulis																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	4	-	-	-	-	-	4	-	-	-	266			4
	99	2	-	-	1	-	-	2	-	-	5	-	-	-	100			5
Y	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	2	-	-	-	-	-	2	-	-	4	-	-	-	80	-	-	4
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	+ 0%
'91	00%	00%	00%	+45%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	66	Dec:	-
	'91	66		-
	'99	120		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
S	85	4	-	-	-	-	-	-	-	-	3	-	1	-	266			4
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	1	-	-	-	-	1	-	-	-	20			1
Y	85	6	1	-	-	-	-	-	-	-	7	-	-	-	466			7
	91	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	99	7	7	-	-	2	-	-	-	-	16	-	-	-	320			16
M	85	2	1	5	-	-	-	-	-	-	8	-	-	-	533	9	22	8
	91	5	3	7	-	-	-	-	-	1	15	1	-	-	1066	7	19	16
	99	4	14	8	3	13	9	-	-	-	51	-	-	-	1020	17	49	51
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	3	-	6	-	-	-	4	-	1	10	-	-	4	933			14
	99	2	2	-	4	5	3	-	-	-	13	-	-	3	320			16
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	220			11

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	13%	33%	00%	+55%
'91	09%	45%	12%	-25%
'99	52%	24%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	999	Dec:		0%
'91	2199			42%
'99	1660			19%

Ribes spp.

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	35	50	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'85	0	Dec:	-
'91	0		-
'99	0		-

Symphoricarpos oreophilus

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	4	-	-	-	-	-	4	-	-	-	80	20	44	4
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	0	Dec:		0%
'91	0			0%
'99	100			20%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Tetradymia canescens																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	99	1	1	-	-	-	-	-	-	-	2	-	-	-	40			2
M	85	1	1	1	-	-	-	-	-	-	3	-	-	-	200	9	7	3
	91	4	1	-	-	-	-	-	-	-	5	-	-	-	333	6	7	5
	99	5	7	1	2	-	-	-	-	-	15	-	-	-	300	13	12	15
D	85	1	1	1	-	-	-	-	-	-	2	-	1	-	200			3
	91	2	-	-	-	-	-	-	-	-	1	-	-	1	133			2
	99	1	1	-	1	-	-	-	-	-	-	1	-	2	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	22%	22%	11%	-11%
'91	13%	00%	13%	-25%
'99	45%	05%	10%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	600	Dec:		33%
'91	532			25%
'99	400			15%

Trend Study 25B-2-99

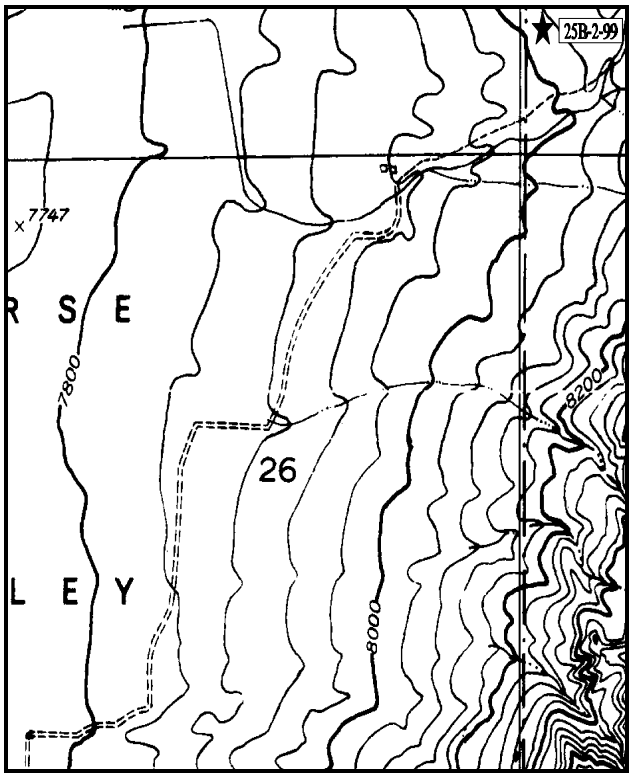
Study site name: Horse Valley . Range type: Big Sagebrush .

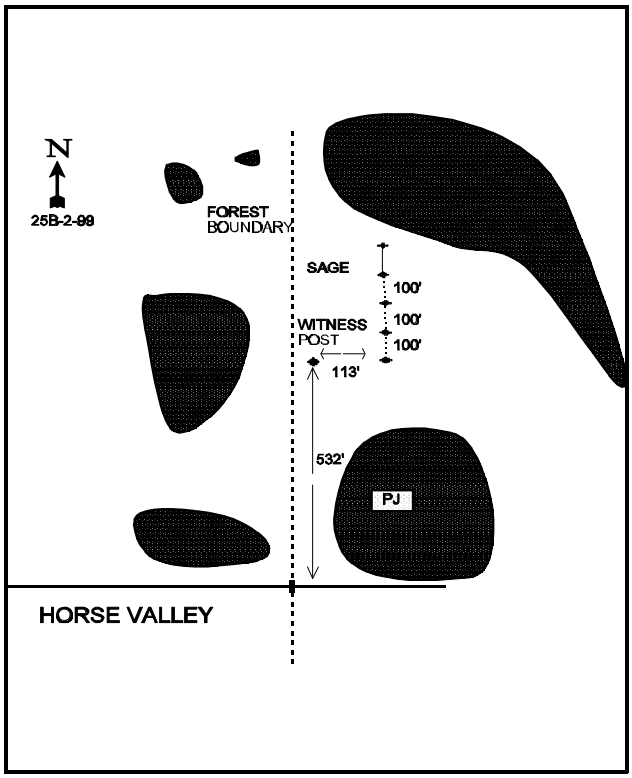
Compass bearing: frequency baseline 165°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11&95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

At the north end of main street (SR 24) in Lyman, SR 24 turns west towards Loa. Turn east here and go 0.35 miles to a 3-way split just beyond a cattleguard. Take the middle fork (the main road) and go 2.2 miles to a fork. Stay left and continue 1.05 miles on the main road to another fork. Again stay left and proceed 0.5 miles north just past a small reservoir to an intersection. Take the right fork toward Neffs Reservoir. On the main road, go 1.6 miles up and east across the top of some private land to a cattleguard at the Forest Service boundary. Park here, then walk 532 feet north along the east side of the fence to a witness post (rebar) next to the fence. The 400' stake is 114 feet east of the witness post. The 0-foot baseline stake lies 400 feet north, and has a red browse tag #7065 attached.





Map Name: Loa 1 NE, Utah

Diagrammatic Sketch

Township 27S , Range 3E , Section 24

UTM 4255485.545 N, 452812.384 E

DISCUSSION

Trend Study No. 25B-2 (46-2)

The Horse Valley transect is located in a sagebrush opening just east of the Forest Service boundary fence in Horse Valley. The other side of the fence is a strip of BLM land which has been proposed for a pinyon-juniper chaining and seeding treatment. Most of the valley is privately owned farmland. The study site has a gentle slope (3-5%) with a south-west aspect. The key species is Wyoming big sagebrush. Cattle graze in the area as part of the Thousand Lakes allotment. The area is thought to be a winter deer concentration area, with many moving into the lower fields in late winter or early spring. However, the pellet group transect read along the baseline in 1999 showed less than 1 days use/acre for both cattle and deer.

The light brown-orange soil appears to be moderate deep with an effective rooting depth of almost 15 inches. It is composed mainly of sand and some silt with little organic matter. Textural analysis indicates it is a sandy clay loam soil that is mildly alkaline (pH of 7.6). Amount of soil phosphorus (7.7 ppm) could be limiting to plant growth and development because it is below what is thought the minimal value of 10 ppm. Rocks and pavement together make up about 30% of the ground cover. Percent bare soil has varied from year to year, however the ratio of bare soil to protective cover has improved since 1994. This would indicate an improved trend for soil, but still poor condition with herbaceous cover only contributing to 20% of the total vegetative cover. Active gullies up to 1-1/2 feet deep are common. Movement of soil and rock fragments is detectable and in some places plant roots are exposed.

Wyoming big sagebrush provides almost all of the browse cover on this site. However, there has been a lot difficulty through the years differentiating between black sagebrush and Wyoming big sagebrush on this site. There is obviously a high occurrence of hybridizing between the two and the great deal of variation expressed in the plants within the area sampled. Wyoming big sagebrush visually dominates the area as it currently (‘99) makes up 91% of the browse cover. The population has many individuals that have hybridized with black sagebrush or with mountain big sagebrush. Forty percent of the leaf samples taken fluoresce with a black light, indicating regression with the higher elevation mountain big sagebrush. These sagebrush average 1 ½ feet in height and 2 feet and more in diameter. The Wyoming big sagebrush was generally vigorous and growing well in 1985, but since then percent decadency has increased and remained between 45 and 41% with the long term effects of the extended drought becoming evident. A majority (65%) of the plants have been only lightly hedged, while a few individuals have been more heavily utilized, usually individuals that are hybrids of mountain big sagebrush and Wyoming big sagebrush. The young age class and seedlings initially (1985) made up 22% of the population, but were scattered and occur only in patches. The combined biotic potential and young age class has steadily gone down since then to only 3% in 1994 and 10% in 1999.

While sagebrush dominates the browse cover, the more numerous broom snakeweed and narrowleaf low rabbitbrush make up less than 10% of the total browse cover. Since 1991, there have been large fluctuations in density estimates for broom snakeweed and low rabbitbrush. The narrowleaf low rabbitbrush is moderately abundant, but is generally small in stature. It displayed moderate to heavy use in past years (57% in ‘91 and 37% in ‘94), with some of the plants displaying poor vigor. Currently these shrubs appear unutilized. Broom snakeweed occurs over the entire area and appears unutilized. It had a vigorous expanding population in 1985 with a biotic potential (proportion of seedlings to the population) of 153%, which decreased rapidly by a factor of more than four times in 1994. Now it has grown rapidly back up again to 4,890 plants/acre. These kind of fluctuations in density occur often for this species with the variable precipitation patterns of southern Utah. Pinyon and pricklypear cactus appear to be slowly invading the area.

Forbs and grasses are scarce and diversity is low because Wyoming big sagebrushes cover is currently nearly 20%. The most abundant forb is pingue hymenoxys, an increaser which is often poisonous to sheep and sometimes cattle. Grass frequency is very low and the most common species are blue grama and bottlebrush squirreltail. The total cover from grasses and forbs currently is just over 4%.

1985 APPARENT TREND ASSESSMENT

Soil trend appears to be downward. The soil is fairly unstable and has a low amount of cover. Small gullies are common and active. Vegetative trend appears slightly down because of the increase of undesirable increasers. The Wyoming big sagebrush population appears stable and moderately used. A proposed chaining would be helpful on the adjacent mature pinyon-juniper woodlands and older sagebrush stands as long as adequate cover is left for wildlife. More herbaceous vegetation is needed in the area to provide green forage for transitional spring range.

1991 TREND ASSESSMENT

Soil trend appears to be continuing downward because percent bare ground and rock is increasing with a corresponding loss of litter cover. Key browse species have decreased densities. Black sagebrush has decreased by 43% with percent decadency going from 14% up to 75%. Wyoming big sagebrush densities did not go down very much (only 5%), but here again the percent decadency went from 14% up to 45%. Narrowleaf low rabbitbrush also lost some of it's population to the drought. It's population went down 13% with 96% of it's population classified as decadent. The most troubling aspect is that broom snakeweed increased by 24%. It went from 6,199 up to 8,199 plants per acre. This trend for broom snakeweed is contrary to most other sites in Utah this year.

TREND ASSESSMENT
soil - down, poor condition
browse - slightly down
herbaceous understory - stable, but still very poor condition

1994 TREND ASSESSMENT

Soil trend now appears to be stabilizing with percent bare ground cover slightly lower than 1991 estimates. The soils would have to still be considered in poor condition, but stable at this time. The key browse species (Wyoming big sagebrush) has a lower density, primarily because of the increased sample size giving better density estimates for populations with discontinuous distributions. The principal feature changes noted for monitoring the condition and trend of this sagebrush population is that there are no seedlings, the percent young is about 3%, and the percent of the population that are classified as decadent has slightly improved to 41%. However, 24% are now displaying poor vigor, up from 13% in 1991. Of major concern is that one in three Wyoming big sagebrush plants are dead. The proportion of black sagebrush displaying poor vigor has decreased to 33%, which is an improvement from 1991 when it was 75%. The increasers, narrowleaf low rabbitbrush and broom snakeweed, have experienced large decreases in their respective populations, 61% and 83%. The herbaceous understory trend is downward for nested frequency values for both grasses and forbs has gone downward since 1991.

TREND ASSESSMENT
soil - stable, but poor condition
browse - downward
herbaceous understory - downward

1999 ASSESSMENT OF TREND

Soil trend appears to be improving slightly with improving ratios of bare soil to protective cover. However, soils would still be considered in poor condition, but slightly improved at this time. Protective cover is still very low (herbaceous, litter, and cryptogamic cover), as illustrated by the number of active small gullies and pedestalling of most all the sagebrush. The key browse species (Wyoming big sagebrush) has a higher density, primarily because some of the plants were classified as black sagebrush during past readings. The

principal feature changes noted for monitoring the condition and trend of this population is that there are few seedlings (1%), the percent young is about 10%, and the percent of the population that are classified as decadent has remained in the low forties (41%, still considered high). Although, those classified with poor vigor have decreased to 13%. The proportion of the sagebrush population classified as black sagebrush has gone down to where it is a very small portion of the sagebrush population. The increasers, low rabbitbrush and broom snakeweed, have again experienced a large decrease and increase in their respective populations, -65% and +71%. The herbaceous understory trend is essentially stable for nested frequency values for grasses and forbs. However, herbaceous vegetation is till lacking.

TREND ASSESSMENT
soil - slightly improved, but still poor condition
browse - stable
herbaceous understory - stable, but still very poor

HERBACEOUS TRENDS --
Herd unit 25B, Study no: 2

Type	Species	Nested Frequency '85	'91	'94	'99	Quadrat Frequency '85	'91	'94	'99	Average Cover % '94	'99
G	Bouteloua gracilis	48	66	61	64	21	25	26	25	1.16	1.66
G	Carex spp.	-	6	-	-	-	2	-	-	-	-
G	Oryzopsis hymenoides	1	3	-	1	1	2	-	1	-	.00
G	Sitanion hystrix	43	72	56	50	22	34	27	22	.34	.55
G	Stipa comata	$_{ab}$9	$_{b}$17	$_{a}$-	$_{a}$1	4	8	-	1	.00	.00
Total for Annual Grasses		0	0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		101	164	117	116	48	71	53	49	1.50	2.22
Total for Grasses		101	164	117	116	48	71	53	49	1.50	2.22
F	Androsace septentrionalis (a)	-	-	-	7	-	-	-	4	-	.02
F	Arabis demissa	-	3	-	-	-	2	-	-	-	-
F	Astragalus convallarius	1	2	3	-	1	1	1	-	.00	-
F	Astragalus spp.	-	-	-	3	-	-	-	2	-	.01
F	Chaenactis douglasii	-	3	-	-	-	1	-	-	-	-
F	Cryptantha jamesii	$_{c}$30	$_{bc}$24	$_{b}$6	$_{a}$-	14	12	4	-	.04	-
F	Cryptantha spp.	-	-	3	-	-	-	1	-	.03	-
F	Erigeron pumilus	4	8	3	3	3	4	3	2	.01	.01
F	Hymenoxys richardsonii	39	59	42	51	17	30	19	22	1.16	2.17
F	Phlox longifolia	-	-	-	3	-	-	-	1	-	.00
F	Townsendia incana	-	3	-	-	-	2	-	-	-	-
Total for Annual Forbs		0	0	0	7	0	0	0	4	0	0.01
Total for Perennial Forbs		74	102	57	60	35	52	28	27	1.25	2.19
Total for Forbs		74	102	57	67	35	52	28	31	1.25	2.21

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 25B, Study no: 2

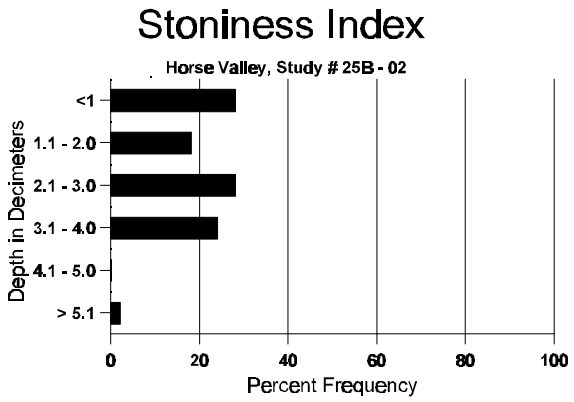
Type	Species	Strip Frequency '94	'99	Average Cover % '94	'99
B	Artemisia frigida	0	0	-	-
B	Artemisia nova	24	2	4.38	.03
B	Artemisia tridentata vaseyana	0	17	-	4.19
B	Artemisia tridentata wyomingensis	58	67	10.72	14.72
B	Atriplex canescens	0	3	-	-
B	Chrysothamnus viscidiflorus stenophyllus	46	25	1.06	.46
B	Echinocereus triglochidatus	0	1	-	-
B	Gutierrezia sarothrae	41	68	.18	1.15
B	Leptodactylon pungens	0	1	-	-
B	Opuntia spp.	7	17	.04	.13
B	Pinus edulis	0	4	-	.15
Total for Browse		176	205	16.39	20.85

BASIC COVER --
Herd unit 25B, Study no: 2

Cover Type	Nested Frequency '94	'99	Average Cover % '85	'91	'94	'99
Vegetation	201	230	6.50	5.75	18.79	24.79
Rock	302	211	11.00	17.25	18.92	12.81
Pavement	303	309	31.50	25.75	8.72	22.56
Litter	349	317	23.50	14.50	16.85	21.91
Cryptogams	66	96	1.75	.75	1.15	2.45
Bare Ground	340	308	25.75	36.00	34.85	24.42

SOIL ANALYSIS DATA --
Herd Unit 25B, Study # 02, Study Name: Horse Valley

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
14.5	53.8 (16.8)	7.6	50.9	27.8	21.3	2.2	7.7	112.0	0.5



PELLET GROUP FREQUENCY --
Herd unit 25B, Study no: 2

Type	Quadrat Frequency '94	Quadrat Frequency '99	Pellet Transect Days Use/Acre (ha) '99
Rabbit	14	9	n/a
Deer	8	3	1 (2)
Cattle	0	0	1 (2)

BROWSE CHARACTERISTICS --
Herd unit 25B, Study no: 2

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia frigida																		
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66	3	3	1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'85	00%	00%	00%
'91	00%	00%	00%
'94	00%	00%	00%
'99	00%	00%	00%

Total Plants/Acre (excluding Dead & Seedlings)			%Change
	'85	0	Dec: -
	'91	66	-
	'94	0	-
	'99	0	-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia nova																		
S	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	9	-	-	1	-	-	-	-	-	10	-	-	-	200			10
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	1	-	-	1	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	85	-	6	-	-	-	-	-	-	-	6	-	-	-	400	9	17	6
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66	9	19	1
	94	23	1	-	1	-	-	-	-	-	25	-	-	-	500	18	33	25
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	13	18	1
D	85	-	1	-	-	-	-	-	-	-	-	-	1	-	66			1
	91	3	-	-	-	-	-	-	-	-	-	-	3	-	200			3
	94	21	2	-	-	-	-	-	-	-	7	-	-	16	460			23
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	160			8
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	100%	00%	14%	-43%
'91	00%	00%	75%	+73%
'94	06%	00%	33%	-96%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	466	Dec:	14%	
'91	266		75%	
'94	980		47%	
'99	40		50%	

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
S	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	91	-	-	-	1	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	85	7	4	-	-	-	-	-	-	-	10	-	1	-	733			11
	91	5	3	-	1	-	-	-	-	-	9	-	-	-	600			9
	94	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	99	20	-	-	1	-	-	1	-	-	22	-	-	-	440			22
M	85	10	33	2	-	-	-	-	-	-	41	-	4	-	3000	20	26	45
	91	10	8	4	1	2	-	-	-	-	24	1	-	-	1666	17	24	25
	94	46	32	2	-	-	-	-	-	-	80	-	-	-	1600	20	36	80
	99	70	35	2	3	1	-	-	-	-	111	-	-	-	2220	19	30	111
D	85	1	6	2	-	-	-	-	-	-	9	-	-	-	600			9
	91	14	4	4	3	2	-	-	-	1	20	-	1	7	1866			28
	94	44	11	3	-	-	-	-	-	-	24	-	-	34	1160			58
	99	49	26	3	10	1	2	-	-	-	60	-	-	31	1820			91
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	940			47
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	940			47

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	66%	06%	08%	- 5%
'91	31%	15%	13%	-31%
'94	30%	04%	24%	+37%
'99	28%	03%	14%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	4333	Dec:	14%
	'91	4132		45%
	'94	2840		41%
	'99	4480		41%

Atriplex canescens																		
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	2	1	-	-	-	-	-	-	-	3	-	-	-	60	-	-	3
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	25%	00%	25%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	0%
	'91	0		0%
	'94	0		0%
	'99	80		25%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus stenophyllus																		
S	85	6	-	-	-	-	-	-	-	-	6	-	-	-	400			6
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	85	11	4	-	-	-	-	-	-	-	15	-	-	-	1000			15
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
M	85	43	8	5	-	-	-	-	-	-	49	-	7	-	3733	5	7	56
	91	-	3	-	-	-	1	-	-	-	4	-	-	-	266	5	7	4
	94	68	19	8	7	-	-	-	-	-	102	-	-	-	2040	4	6	102
	99	34	-	-	3	-	-	-	-	-	37	-	-	-	740	6	10	37
D	85	34	17	8	-	-	-	-	-	-	49	-	7	3	3933			59
	91	36	26	17	8	10	7	4	-	-	38	-	8	62	7200			108
	94	15	25	3	2	-	-	-	-	-	27	-	-	18	900			45
	99	11	-	-	2	-	-	-	-	-	6	-	-	7	260			13
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	420			21
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	220			11

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	22%	10%	13%	-13%
'91	35%	22%	62%	-61%
'94	30%	07%	12%	-60%
'99	00%	00%	12%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	8666	Dec:	45%
	'91	7532		96%
	'94	2940		31%
	'99	1180		22%

Echinocereus triglochidatus																		
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	4	6	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'94	0		-
	'99	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	85	142	-	-	-	-	-	-	-	-	142	-	-	-	9466			142
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	114	-	-	3	-	-	-	-	-	116	1	-	-	2340			117
Y	85	15	-	-	-	-	-	-	-	-	15	-	-	-	1000			15
	91	9	-	-	-	1	-	-	-	-	10	-	-	-	666			10
	94	8	-	-	2	-	-	-	-	-	10	-	-	-	200			10
	99	149	-	-	10	-	-	-	-	-	159	-	-	-	3180			159
M	85	69	7	-	-	-	-	-	-	-	70	-	6	-	5066	7	6	76
	91	71	1	-	22	-	-	4	-	-	96	1	1	-	6533	5	4	98
	94	47	-	-	9	-	-	-	-	-	56	-	-	-	1120	7	6	56
	99	63	-	-	2	-	-	-	-	-	65	-	-	-	1300	7	8	65
D	85	1	1	-	-	-	-	-	-	-	-	-	-	2	133			2
	91	10	-	1	4	-	-	-	-	-	14	-	1	-	1000			15
	94	5	-	-	-	-	-	-	-	-	4	-	-	1	100			5
	99	23	-	-	2	-	-	-	-	-	24	-	-	1	500			25
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	380			19
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	200			10

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	09%	00%	09%	+24%
'91	02%	.81%	02%	-83%
'94	00%	00%	01%	+71%
'99	00%	00%	.40%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	6199	Dec:	2%
	'91	8199		12%
	'94	1420		7%
	'99	4980		10%

Leptodactylon pungens																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'94	0		-
	'99	40		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
Y	85	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	91	4	-	-	-	-	-	-	-	-	4	-	-	-	266			4
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	5	-	-	3	-	-	-	-	-	7	1	-	-	160			8
M	85	22	-	-	-	-	-	-	-	-	13	-	9	-	1466	3	4	22
	91	6	-	-	-	-	-	1	-	-	7	-	-	-	466	3	4	7
	94	7	-	-	-	-	-	-	-	-	7	-	-	-	140	3	7	7
	99	12	-	-	3	-	-	1	-	-	16	-	-	-	320	3	11	16
D	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	91	2	1	-	-	-	-	-	-	-	3	-	-	-	200			3
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	6	-	-	-	-	-	-	-	-	-	-	-	6	120			6
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	33%	-48%
'91	07%	00%	00%	-83%
'94	00%	00%	00%	+73%
'99	00%	00%	20%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	1799	Dec:	11%
	'91	932		21%
	'94	160		13%
	'99	600		20%

Pinus edulis																		
S	85	4	-	-	-	-	-	-	-	-	4	-	-	-	266			4
	91	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
Y	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	1	-	-	-	-	-	4	-	-	-	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	+ 0%
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	66	Dec:	-
	'91	66		-
	'94	0		-
	'99	80		-

Trend Study 25B-3-99

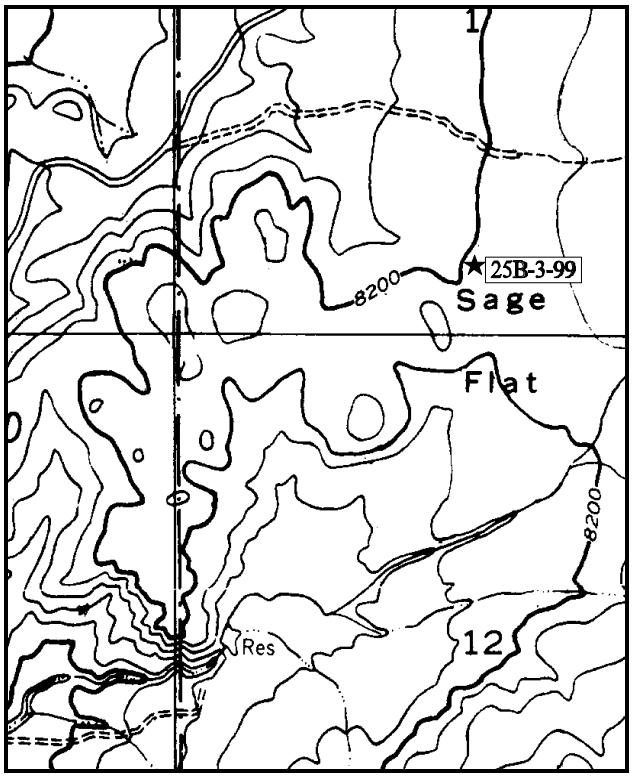
Study site name: Sage Flat . Range type: Big Sagebrush .

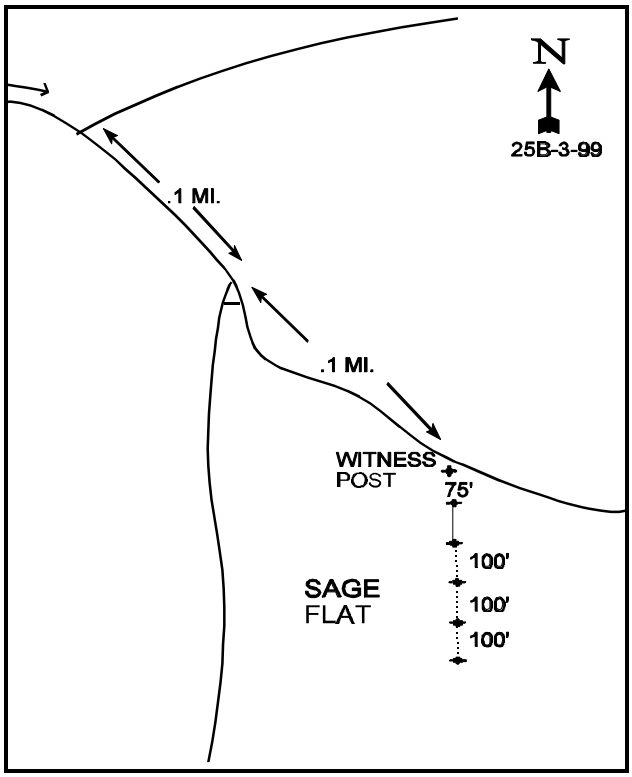
Compass bearing: frequency baseline 165°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11&95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From Fremont travel north on SR 72 for 2.25 miles to a major fork, bear right and continue 2.8 miles on SR 72 to a cattleguard at the Forest Service boundary. One hundred yards beyond the cattleguard turn right. At 0.15 miles, a road forks off to the right. Go up this rough road 0.45 miles to a fork. Turn right and go 0.1 miles to another fork. Turn left at the fork and go 0.1 miles into the flat to a witness post on the right side of the road. The witness post and transect stakes are green steel fence posts with a white top. The frequency baseline starts 75' due south of the witness post.





Map Name: Loa 1 NE, Utah

Diagrammatic Sketch

Township 27S , Range 3E , Section 1

UTM 4259262.471 N, 453620.247 E

DISCUSSION

Trend Study No. 25B-3 (46-3)

The Sage Flat trend study is located in an open valley dominated by Wyoming big sagebrush. This part of Sage Flat is at an elevation of 8,200 feet with a southwest aspect and slope of less than 5%. The area has been heavily grazed by livestock since the area was settled. The past abuses have led to an almost monotypic shrub type with few herbaceous plants. The area is considered a priority for a chaining and seeding treatment by the Forest Service and Division of Wildlife Resources. The flat is thought to be an important deer concentration area in winter-spring and would be enhanced by more early season herbaceous species. A deer pellet group transect in the flat monitored since 1981 shows an increase in deer use, up to a high of 19 deer days use/acre (47 ddu/ha) in 1984-85. Since then, it has slowly decreased to 7 deer days use/acre (17 ddu/ha) in 1991-1992 (Jense et al. 1992). A pellet group transect read in conjunction with the vegetative transect in 1999 estimates 21 deer days use/acre (52 ddu/ha), 15 cow days use/acre (37 cdu/ha), and 6 elk days use/acre (15 edu/ha). By inspection of the pellet group quadrat frequency table, one can see that rabbit use of the area has more than doubled. It would not take very many rabbits to have a detrimental effect on the herbaceous component because it is so limited on this site.

Erosion is evident on the site. The soil surface is characteristically rough, composed of mounds of sandy soil. Plant pedestalling is abundant. Ground cover is provided only by the scattered sagebrush and underlying litter for there are few herbaceous plants. On average, about 50% of the soil surface is exposed and unprotected. The soil texture for the site is a loam, with a mildly alkaline pH (7.7). Effective rooting depth is moderate at more than 18 inches. Amounts of phosphorus (4.7ppm) and potassium (67.2ppm) in the soil is below what is considered necessary for normal plant growth and development. There are several small active gullies through the transect area. In 1994, small trees had been put into many of the small gullies to help them heal and help prevent further damage from high intensity summer storms.

Wyoming big sagebrush, the key species, accounted for 94% of the total shrub cover in 1999. Mature plants average 1-1/2 to 2 feet tall and more than 1-1/2 feet in diameter. The sagebrush is mostly moderately browsed and provides nearly all of big game winter forage on the site. The biotic potential or percentage of seedlings to the estimated population, was very high at 124% (1985). Since then it has gone from 7% in 1991, <1% in 1994, to 2% in 1999. The percentage of young plants in the population has been variable, but overall, increasing from 17% in 1985 to 43% in 1999, indicating good seedling survival. Percent decadence has been variable, from a high of 43% in 1985, to a low of 16% in 1994, and to a moderate level in 1999 of 24%. This would not be unexpected with the high density of the sagebrush (12,000 plants/acre) on the site. The intraspecific competition would be immense with as much cumulative drought as we have been experiencing since 1985.

The broom snakeweed appeared vigorous with a high number of seedlings and young in 1985. Currently (‘99) it appears that they have decreased substantially from a high of 8,999 plants/acre in 1985 to 1,200 now. Black sagebrush is uncommon in the valley with the deeper soils, but is dominant up the slope with shallow soils along with mature pinyon and juniper.

There is a fair amount of western wheatgrass in the valley, a desirable species for the site, especially since it enhances water infiltration and also provides good forage. The other grass species occur only occasionally, as do a few forbs. Total cover for the herbaceous understory is poor, as it does not usually amount to more than 3 to 4%.

1985 APPARENT TREND ASSESSMENT

Soil trend appears downward, as more top soil is lost and gullies become deeper. The unstable soil makes it difficult for grass and forb seedlings to become established. The presence of undesirable increaser shrubs,

generally poor vigor of sagebrush, and low diversity and lack of herbaceous vegetation would indicate a downward vegetative trend. A chaining and seeding would be beneficial on the nearly flat areas of this valley. Also, further grazing restrictions may be necessary for recovery.

1991 TREND ASSESSMENT

Soil trend appears to be continuing downward with vegetative basal cover half what it was in 1985. Small pine tees have been set in the small gullies to help stabilize them. The key browse species have increased in density and decreased in percent decadency from 43% down to 24%. Wyoming big sagebrush now has a density of more than 12,000 plants per acre. The grasses have increased with the forbs also showing some change.

TREND ASSESSMENT
soil - continuing downward
browse - upward
herbaceous understory - upward because of the increases in the grass species, but still poor condition

1994 TREND ASSESSMENT

Soil is considered slightly declining at this time and still in very poor condition with 50% bare ground. There has been some effort to stabilize the small gullies that run through the sagebrush flat. The key shrub on this winter range is Wyoming big sagebrush. Biotic potential is less than 1% at this time, but the percent young age class is quite high at 39%. Percent decadence has steadily gone down since 1985, from 43% to 24% and is now 16%. Broom snakeweed density has decreased by over 62% since 1985. Trend for browse is upward. The trend for the herbaceous understory is stable, for the grasses make up 94% of the herbaceous understory and they are almost the same nested frequency values as in 1991.

TREND ASSESSMENT
soil - slightly downward
browse - upward
herbaceous understory - stable for grasses, the forbs went downward, but they only make up a very small portion of the herbaceous cover, total cover is still barely 4%

1999 TREND ASSESSMENT

Soil trend is stable and still in very poor condition with 47% bare ground. There has been some effort to stabilize the small gullies that run through the sagebrush flat but the gully plugs are not stopping continued gully erosion. The key shrub on this winter range is Wyoming big sagebrush. Biotic potential has slightly improved to 2%, but the percent young age class is quite high at 43%. Percent decadence had steadily gone down since 1985, from 43% to 24% and then 16%. However, it has now gone up again to 24%. This is still not alarming because of the relatively high density of the population and the amount of drought we have experienced since 1985. Broom snakeweed density have a decreased density again. They obviously cannot compete with the much more competitive sagebrush at these high densities with drought. Trend for browse is stable. The trend for the herbaceous understory is stable, for the grasses make up 94% of the herbaceous understory and they are almost the same nested frequency values as in 1991.

TREND ASSESSMENT
soil - stable, but still very poor
browse - stable
herbaceous understory - stable for grasses and slightly up for forbs, but still poor with 4% total cover

HERBACEOUS TRENDS --
Herd unit 25B, Study no: 3

Type	Species	Nested Frequency '85	'91	'94	'99	Quadrat Frequency '85	'91	'94	'99	Average Cover % '94	'99
G	Agropyron smithii	$_{a}$137	$_{b}$182	$_{b}$196	$_{a}$133	45	64	65	53	2.41	1.15
G	Agropyron spicatum	$_{a}$-	$_{a}$-	$_{a}$-	$_{b}$62	-	-	-	24	-	.50
G	Bouteloua gracilis	$_{a}$-	$_{b}$10	$_{b}$17	$_{b}$16	-	3	6	5	.25	.36
G	Oryzopsis hymenoides	$_{a}$5	$_{a}$9	$_{a}$6	$_{b}$22	2	5	3	13	.21	.29
G	Poa secunda	5	-	-	-	4	-	-	-	-	-
G	Sitanion hystrix	$_{b}$94	$_{ab}$74	$_{a}$57	$_{a}$42	44	33	25	20	1.14	.66
Total for Annual Grasses		0	0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		241	275	276	275	95	105	99	115	4.03	2.98
Total for Grasses		241	275	276	275	95	105	99	115	4.03	2.98
F	Arabis spp.	-	-	-	2	-	-	-	2	-	.01
F	Cryptantha spp.	$_{b}$11	$_{c}$30	$_{bc}$13	$_{a}$-	5	15	8	-	.09	-
F	Cymopterus spp.	-	2	-	-	-	1	-	-	-	-
F	Erigeron pumilus	32	45	22	40	15	21	14	21	.12	.15
F	Hymenoxys richardsonii	4	1	-	2	2	1	-	1	.00	.15
F	Penstemon spp.	-	-	-	1	-	-	-	1	.00	.00
F	Phlox longifolia	$_{b}$38	$_{c}$64	$_{a}$6	$_{a}$13	14	30	3	8	.01	.04
F	Senecio multilobatus	-	1	-	-	-	1	-	-	-	-
F	Unknown forb-perennial	1	-	-	-	1	-	-	-	-	-
Total for Annual Forbs		0	0	0	0	0	0	0	0	0	0
Total for Perennial Forbs		86	143	41	58	37	69	25	33	0.23	0.35
Total for Forbs		86	143	41	58	37	69	25	33	0.23	0.35

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 25B, Study no: 3

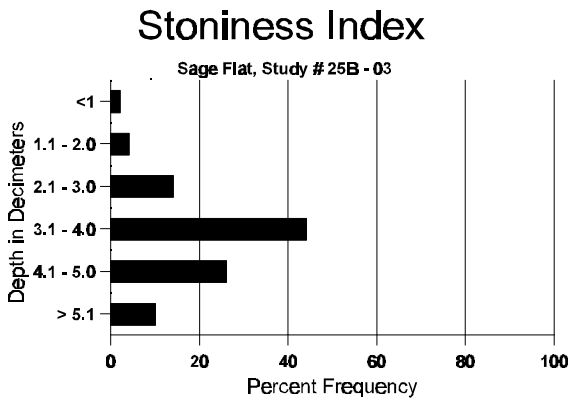
Type	Species	Strip Frequency '94	'99	Average Cover % '94	'99
B	Artemisia frigida	7	13	.15	.30
B	Artemisia nova	0	3	-	.63
B	Artemisia tridentata wyomingensis	99	98	21.47	20.11
B	Ceratoides lanata	1	0	-	-
B	Chrysothamnus viscidiflorus	9	11	.01	.00
B	Coryphantha vivipara arizonica	0	3	-	-
B	Gutierrezia sarothrae	64	36	.69	.33
B	Opuntia spp.	0	0	-	-
Total for Browse		180	164	22.33	21.37

BASIC COVER --
Herd unit 25B, Study no: 3

Cover Type	Nested Frequency '94	Nested Frequency '99	Average Cover % '85	Average Cover % '91	Average Cover % '94	Average Cover % '99
Vegetation	290	281	6.00	2.50	24.93	24.49
Rock	152	78	.50	.50	1.67	.54
Pavement	180	211	2.50	4.00	.98	4.90
Litter	368	342	30.00	27.00	18.25	19.50
Cryptogams	242	227	5.00	10.50	7.34	7.58
Bare Ground	367	346	56.00	55.50	50.48	46.57

SOIL ANALYSIS DATA --
Herd Unit 25B, Study # 03, Study Name: Sage Flat

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
18.3	52.4 (17.2)	7.7	42.6	31.8	25.6	1.9	4.7	67.2	0.7



PELLET GROUP FREQUENCY --
Herd unit 25B, Study no: 3

Type	Quadrat Frequency '94	Quadrat Frequency '99
Rabbit	25	53
Elk	4	3
Deer	1	2
Cattle	4	2

Pellet Transect Days Use/Acre (ha) '99
n/a
6 (15)
21 (52)
15 (37)

BROWSE CHARACTERISTICS --
Herd unit 25B, Study no: 3

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia frigida																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	5	1	-	-	-	-	-	-	-	6	-	-	-	120			6
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	1	-	-	-	1	-	-	-	66	5	7	1
	94	16	-	-	-	-	-	-	-	-	16	-	-	-	320	3	5	16
	99	-	10	6	1	-	-	-	-	-	17	-	-	-	340	3	5	17
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	2	-	-	-	-	-	-	2	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	50%	00%	+59%
'94	00%	00%	00%	+36%
'99	44%	32%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	0	Dec:		0%
'91	132			0%
'94	320			0%
'99	500			8%

Artemisia nova																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	2	-	-	-	-	-	-	-	4	-	-	-	80			4
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	2	-	-	-	-	-	-	-	2	-	-	-	40	6	10	2
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	57%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	0	Dec:		0%
'91	0			0%
'94	0			0%
'99	140			14%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
S	85	138	-	-	-	-	-	-	-	-	138	-	-	-	9200			138
	91	13	-	-	1	-	-	-	-	-	13	1	-	-	933			14
	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	14	-	-	-	-	-	-	-	-	14	-	-	-	280			14
Y	85	17	2	-	-	-	-	-	-	-	18	-	1	-	1266			19
	91	69	7	-	16	-	-	3	-	-	88	6	1	-	6333			95
	94	246	-	-	7	-	-	-	-	-	253	-	-	-	5060			253
	99	135	121	-	2	-	-	-	-	-	258	-	-	-	5160			258
M	85	5	28	11	-	-	-	-	-	-	43	-	1	-	2933	19	20	44
	91	28	12	3	-	1	1	-	-	4	49	-	-	-	3266	20	26	49
	94	290	-	-	2	-	-	-	-	-	289	1	2	-	5840	19	29	292
	99	44	121	30	2	-	-	-	-	-	197	-	-	-	3940	18	27	197
D	85	-	22	26	-	-	-	-	-	-	46	-	1	1	3200			48
	91	22	11	3	-	-	1	-	-	9	33	4	3	6	3066			46
	94	100	3	-	-	-	-	-	-	-	55	-	-	48	2060			103
	99	34	68	21	-	9	9	-	-	-	96	-	-	45	2820			141
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	1000			50
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	1580			79

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	47%	33%	04%	+42%
'91	16%	11%	05%	+ 2%
'94	.46%	00%	08%	- 8%
'99	54%	10%	08%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	7399	Dec:	43%
	'91	12665		24%
	'94	12960		16%
	'99	11920		24%

Ceratoides lanata																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	2	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'94	20		-
	'99	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	2	-	1	-	-	-	-	-	-	3	-	-	-	60			3
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	7	-	-	-	-	-	-	-	-	7	-	-	-	140	4	6	7
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40	4	6	2
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	99	4	-	2	2	-	1	-	-	-	3	-	-	6	180			9
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	200			10

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	+14%
'99	00%	29%	43%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	0%
	'91	0		0%
	'94	240		33%
	'99	280		64%

Coryphantha vivipara arizonica																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'94	0		-
	'99	60		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	85	31	-	-	-	-	-	-	-	-	31	-	-	-	2066			31
	91	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	99	42	-	-	-	-	-	-	-	-	42	-	-	-	840			42
Y	85	24	-	-	-	-	-	-	-	-	24	-	-	-	1600			24
	91	59	3	-	-	-	-	3	-	-	65	-	-	-	4333			65
	94	13	-	-	-	-	-	-	-	-	13	-	-	-	260			13
	99	28	-	-	-	-	-	-	-	-	28	-	-	-	560			28
M	85	92	-	-	-	-	-	-	-	-	91	-	1	-	6133	7	5	92
	91	67	6	1	2	1	-	-	-	-	77	-	-	-	5133	3	2	77
	94	154	-	-	5	-	-	-	-	-	158	-	-	1	3180	5	5	159
	99	30	-	-	-	-	-	-	-	-	30	-	-	-	600	6	6	30
D	85	16	2	1	-	-	-	-	-	-	19	-	-	-	1266			19
	91	6	-	-	-	1	-	-	-	-	3	-	1	3	466			7
	94	16	-	-	-	-	-	-	-	-	16	-	-	-	320			16
	99	2	-	-	-	-	-	-	-	-	1	-	-	1	40			2
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	180			9
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	01%	.74%	.74%	+ 9%
'91	07%	.67%	03%	-62%
'94	00%	00%	.53%	-68%
'99	00%	00%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	8999	Dec:	14%
	'91	9932		5%
	'94	3760		9%
	'99	1200		3%

Opuntia spp.																		
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	9	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'94	0		-
	'99	0		-

Trend Study 25B-4-99

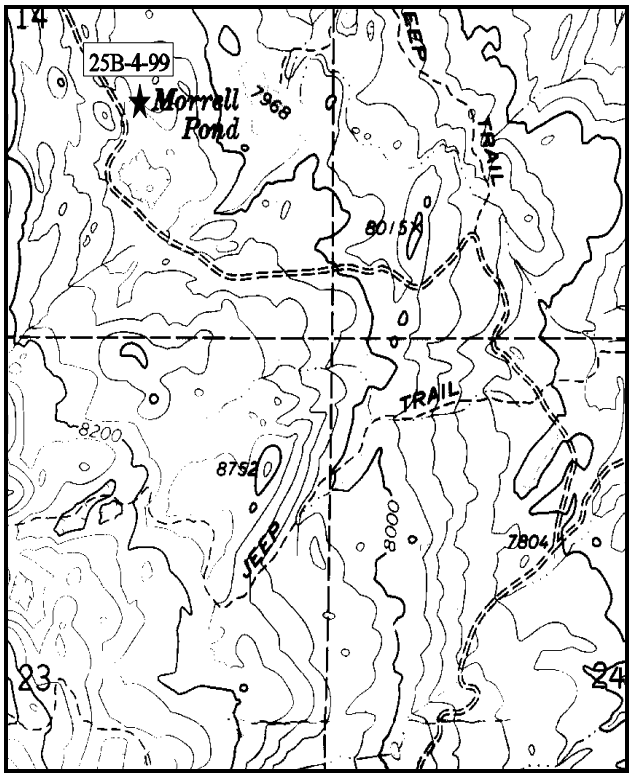
Study site name: Solomon Basin . Range type: Mixed Mountain Brush .

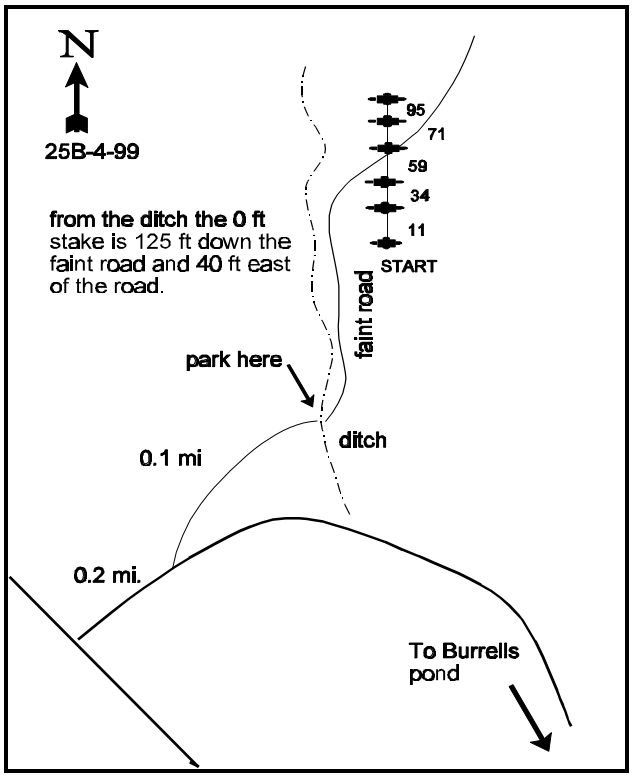
Compass bearing: frequency baseline 320°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95 ft).

LOCATION DESCRIPTION

Travel north from Fremont on SR 72 for 7.3 miles to the Elkhorn-Torrey Road. Turn right and go 2.9 miles to a cattleguard. From the cattleguard go 1.7 miles to an intersection by Heart Lake. Turn left toward Meeks Lake and go 3.0 miles to a cattleguard. Go another 1.9 miles on the main road to an intersection. Stay left and go 0.9 miles toward Solomon Basin. Stay left again, bypassing the Morrell Pond Road and continue 0.55 miles, passing a doughnut-shaped pond. Take a sharp right turn here and go 0.2 miles to another fork. Bear left (the right fork takes you to Morrells Pond) and drive less than 0.1 miles to a ditch. Park here (very faint) and walk down the ditch for approximately 125 feet. The 0-foot stake is approximately 40 feet east of the ditch and marked with browse tag #26.





Map Name: Geyser Peak, Utah Diagrammatic Sketch

Township 26S , Range 4E , Section 14 UTM 4266794.909 N, 461694.276 E

DISCUSSION

Trend Study No. 25B-4 (46-4)

The Solomon Basin study samples important deer winter range on the gently rolling terrain of Solomon Basin. The initial site had to be relocated in 1994 because of a new road that went through the middle of the original transect. This new site is located between two low parallel ridges, within a moderately shallow and narrow ravine. The elevation is 8,000 feet. Slope varies from 0% to 20%, but on average it is about 5%. Aspect of the site is generally east, with the transect running to the north. The site is dominated by mature pinyon and in the vicinity are stands of aspen and open sagebrush flats. There is a pond nearby, which would tend to concentrate grazing in the area. This has a prevailing effect on the vegetative composition. The area is considered important to both livestock and wildlife. Pellet group data from the site in 1999 estimate 19 deer and 42 cow days use/acre (47 ddu/ha, 104 cdu/ha. Only one elk pellet group was encountered.

Besides being over grazed by sheep and cattle since the early 1900's, the area is also recognized as a key wintering area for deer. Heavy year-long livestock grazing historically has led to deterioration of the range and watershed values until the establishment of a management plan and rest-rotation grazing in 1967. There are several projects proposed by the Forest Service for the basin, including chaining and seeding pinyon-juniper woodlands and sagebrush treatments. Treatment of the mature pinyon-juniper community is a priority in the DWR management plan in order to provide more herbaceous spring forage and improve protective ground cover.

Excessive livestock trampling, removal of herbaceous vegetation, and rocky soil has led to soil loss. Erosion is not severe, but appears continual. The soil is moderately deep with an effective rooting depth of almost 19 inches with a neutral pH (7.3). The soil texture is a clay loam. Soil phosphorus was low at only 4.6 ppm, where 10 ppm is considered minimal for normal plant growth and development. Rock-pavement cover is relatively low at only about 14%. Litter accumulation occurs mostly under the pinyon, juniper, and sagebrush.

The dominant overstory is a mixture of mature pinyon pine with a few scattered juniper. The key browse species are mountain big sagebrush and black sagebrush. Together they contribute to over 50% of the browse cover. The plants on average have only received light to moderate use. The browse species that appear to be more preferred are Eriogonum, snowberry, Utah serviceberry, and winterfat. It is difficult to determine how much of the hedging has been done by deer, as cattle turn to browse when herbaceous plants are not available or scarce. Broom snakeweed and several species of rabbitbrush appear to be stable except for rubber rabbit brush which seems to be increasing. Pinyon and juniper also appear to be slowly invading.

Herbaceous plants are scattered throughout the sagebrush, pinyon and juniper. Even though there are about 10 species of grasses on the site, three species (blue grama, Salina wildrye, and Kentucky bluegrass) make of 95% of the total grass cover. Kentucky bluegrass is a valuable species because it is sod forming and somewhat resistant to grazing, however it is an increaser with moderate to heavy livestock grazing pressure. Along with the other grass species, they provide a small amount of fall forage. Forbs also have a low density and provide little forage. Other than dandelion (an increaser), Pingue hymenoxys (also an increaser) is the most common forb on the site.

1994 APPARENT TREND ASSESSMENT

The original study site had to be relocated because the road was moved and put through the middle of the baseline. Therefore, the data collected for the first site (1985 and 1991) are not included here so that there will be no confusion by trying to unknowingly compare the two sites. Soil trend would be considered stable at this time, but only in fair condition with 31% bare ground and only 30% litter cover. The two most abundant key browse species on the site are black sagebrush and mountain big sagebrush. The basic trend for

the original site since 1985 is that black sagebrush are slowly increasing while mountain big sagebrush was decreasing. The loss of mountain big sagebrush would be more significant because they are about three times taller than black sagebrush, making them more available for winter use. Trend for browse on the relocated site appears stable. They are both about equal in the amount of cover each contributes to the total browse cover. The trend for the herbaceous understory also appears stable without any previous data.

1999 TREND ASSESSMENT

Trend for soil is stable at this time, with little changes in percent bare soil and litter cover. The ratio of bare soil to protective cover is slightly better, but still poor at less than 1:2. The two most abundant browse species on the site are black sagebrush and mountain big sagebrush. The basic trend for the new site is that black sagebrush appears to be slowly increasing, while mountain big sagebrush is slowly decreasing. The mountain big sagebrush would be more effected by the extended drought since 1985 than black sagebrush. The loss of mountain big sagebrush would be more significant in that they are about three times taller than black sagebrush, making them more available for winter use with moderately deep snow. Trend for browse would still be stable with some losses to mountain big sagebrush, but gains to black sagebrush. They are both about equal in the amount of cover each contributes to the total browse cover. As indicated by the lower sum of nested frequency values, the trend for the herbaceous understory is down for both grasses and forbs.

TREND ASSESSMENT
soil - stable, but only fair condition
browse - stable overall
herbaceous understory - slightly down

HERBACEOUS TRENDS --
Herd unit 25B, Study no: 4

Type	Species	Nested Frequency '94	'99	Quadrat Frequency '94	'99	Average Cover % '94	'99
G	Agropyron smithii	-	1	-	1	-	.00
G	Agropyron spicatum	-	4	-	2	-	.03
G	Bouteloua gracilis	56	*35	20	13	.78	1.45
G	Carex spp.	23	16	7	5	.16	.12
G	Elymus salina	201	*168	69	54	5.25	4.33
G	Festuca ovina	10	3	2	1	.18	.03
G	Oryzopsis hymenoides	16	*3	9	1	.09	.15
G	Poa fendleriana	-	*6	-	3	-	.06
G	Poa pratensis	65	76	20	19	2.55	5.40
G	Poa secunda	7	*-	3	-	.01	-
G	Sitanion hystrix	11	12	5	5	.05	.12
G	Stipa columbiana	4	-	2	-	.03	-
G	Stipa comata	6	-	2	-	.03	-
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		399	324	139	104	9.16	11.73
Total for Grasses		399	324	139	104	9.16	11.73

Type	Species	Nested Frequency '94	'99	Quadrat Frequency '94	'99	Average Cover % '94	'99
F	Antennaria rosea	5	*5	1	1	.15	.38
F	Androsace septentrionalis (a)	-	2	-	1	-	.00
F	Arabis demissa	-	*5	-	3	-	.01
F	Artemisia ludoviciana	3	4	1	1	.03	.15
F	Astragalus convallarius	6	6	2	3	.01	.04
F	Astragalus miser	-	1	-	1	-	.00
F	Aster spp.	5	18	3	8	.01	.36
F	Astragalus spp.	11	1	5	1	.02	.00
F	Castilleja linariaefolia	7	3	4	2	.02	.03
F	Cirsium spp.	9	9	4	5	.07	.22
F	Cryptantha spp.	11	3	6	3	.05	.04
F	Erigeron pumilus	18	4	7	3	.03	.01
F	Eriogonum racemosum	-	-	-	-	-	.00
F	Hymenoxys richardsonii	57	38	29	22	.62	.69
F	Lesquerella spp.	3	-	1	-	.00	-
F	Machaeranthera canescens	36	*11	13	6	.38	.49
F	Microsteris gracilis (a)	3	-	1	-	.00	-
F	Penstemon spp.	2	4	1	3	.00	.04
F	Phlox longifolia	11	9	5	3	.02	.01
F	Schoencrambe linifolia	7	*-	4	-	.04	-
F	Senecio multilobatus	-	3	-	1	-	.00
F	Sphaeralcea coccinea	4	2	2	2	.01	.03
F	Taraxacum officinale	18	*52	6	14	.49	1.85
F	Unknown forb-perennial	-	1	-	1	-	.00
Total for Annual Forbs		3	2	1	1	0.00	0.00
Total for Perennial Forbs		213	179	94	83	2.00	4.40
Total for Forbs		216	181	95	84	2.00	4.41

* Indicates significant difference at % = 0.10

BROWSE TRENDS --
Herd unit 25B, Study no: 4

Type	Species	Strip Frequency '94	Strip Frequency '99	Average Cover % '94	Average Cover % '99
B	Amelanchier utahensis	9	5	.63	.03
B	Artemisia frigida	1	1	-	-
B	Artemisia nova	39	57	4.28	6.84
B	Artemisia tridentata tridentata	-	-	-	.15
B	Artemisia tridentata vaseyana	24	32	3.94	6.58
B	Atriplex canescens	0	0	-	-
B	Ceratoides lanata	9	0	.21	-
B	Cercocarpus ledifolius	0	8	-	.18
B	Chrysothamnus nauseosus	17	18	2.23	3.11
B	Chrysothamnus viscidiflorus viscidiflorus	50	42	2.21	1.47
B	Cowania mexicana stansburiana	0	2	-	.15
B	Coryphantha vivipara arizonica	0	1	-	.00
B	Eriogonum corymbosum	22	21	.88	1.17
B	Gutierrezia sarothrae	53	49	1.27	1.00
B	Juniperus osteosperma	0	1	.15	.15
B	Opuntia spp.	2	2	.01	-
B	Pediocactus simpsonii	0	2	-	.03
B	Pinus edulis	0	13	3.49	4.09
B	Symphoricarpos oreophilus	5	8	.16	.48
B	Tetradymia canescens	14	17	.10	.24
B	Yucca harrimaniae	0	2	-	.18
Total for Browse		245	281	19.60	25.92

CANOPY COVER --
Herd unit 25B, Study no: 4

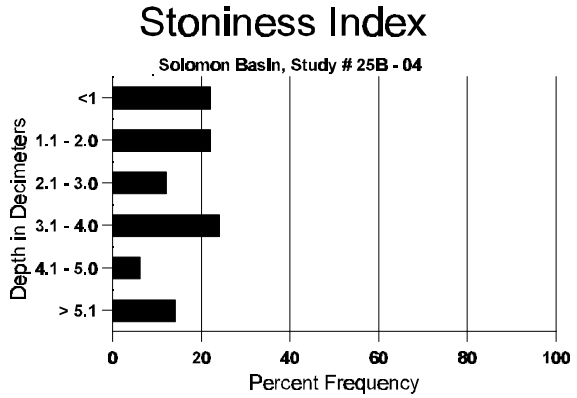
Species	Percent Cover '99
Amelanchier utahensis	2
Pinus edulis	8

BASIC COVER --
Herd unit 25B, Study no: 4

Cover Type	Nested Frequency '94	'99	Average Cover % '94	'99
Vegetation	339	340	27.32	38.12
Rock	255	169	5.05	2.79
Pavement	340	328	4.77	10.95
Litter	448	420	29.63	31.77
Cryptogams	9	23	.30	.43
Bare Ground	377	351	31.40	29.84

SOIL ANALYSIS DATA --
Herd Unit 25B, Study # 04, Study Name: Solomon Basin

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
18.7	52.0 (16.4)	7.3	44.2	20.2	35.6	2.0	4.6	208.0	0.5



PELLET GROUP FREQUENCY --
Herd unit 25B, Study no: 4

Type	Quadrat Frequency '94	'99	Pellet Transect Days Use/Acre (ha) '99
Rabbit	5	12	n/a
Elk	-	1	1 (2)
Deer	11	6	19 (47)
Cattle	1	9	42 (104)

BROWSE CHARACTERISTICS --
Herd unit 25B, Study no: 4

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
Y	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
M	94	11	1	1	-	-	-	-	-	-	13	-	-	-	260	33	42	13
	99	-	1	-	-	1	-	-	-	-	2	-	-	-	40	50	57	2
D	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	3	-	-	-	-	-	1	-	1	1	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	07%	07%	00%	-57%
'99	33%	00%	33%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	280	Dec:		0%
'99	120			50%

Artemisia frigida																		
M	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40	1	2	2
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	2	6	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	-50%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	40	Dec:		-
'99	20			-

Artemisia nova																		
S	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	7	-	-	-	-	-	2	-	-	9	-	-	-	180			9
Y	94	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	99	43	-	-	1	-	-	1	-	-	45	-	-	-	900			45
M	94	149	5	1	-	-	-	-	-	-	155	-	-	-	3100	10	16	155
	99	111	35	2	4	-	-	2	-	-	154	-	-	-	3080	8	17	154
D	94	40	5	-	-	-	-	-	-	-	33	-	-	12	900			45
	99	14	16	4	1	-	-	-	-	-	33	1	-	1	700			35
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	240			12

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	05%	.48%	06%	+12%
'99	22%	03%	.42%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	4140	Dec:		22%
'99	4680			15%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
Y	94	27	-	-	-	-	-	-	-	-	27	-	-	-	540			27
	99	5	-	-	-	-	-	-	-	-	3	-	-	-	100			5
M	94	42	1	-	-	-	-	-	-	-	43	-	-	-	860	19	28	43
	99	43	11	-	-	-	-	-	-	-	53	1	-	-	1080	23	36	54
D	94	5	-	-	-	-	-	-	-	-	2	-	-	3	100			5
	99	5	1	2	1	-	-	-	-	-	6	1	-	2	180			9
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	140			7
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	01%	00%	04%	- 9%
'99	18%	03%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	1500	Dec:		7%
'99	1360			13%

Atriplex canescens																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	28	23	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	37	32	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'94	0	Dec:	-
'99	0		-

Ceratoides lanata																		
M	94	3	11	5	-	-	-	-	-	-	19	-	-	-	380	6	6	19
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	58%	26%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'94	380	Dec:	-
'99	0		-

Cercocarpus ledifolius																		
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	3	-	-	-	-	-	-	-	3	-	-	-	60			3
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	14	-	1	3	-	-	-	18	-	-	-	360	4	7	18

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	19%	81%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'94	0	Dec:	-
'99	420		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus montanus																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	15	24	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing				Moderate Use			Heavy Use			Poor Vigor						%Change		
	'94			00%			00%			00%								
	'99			00%			00%			00%								
Total Plants/Acre (excluding Dead & Seedlings)													'94		0	Dec:		-
													'99		0			-
Chrysothamnus depressus																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	12	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing				Moderate Use			Heavy Use			Poor Vigor						%Change		
	'94			00%			00%			00%								
	'99			00%			00%			00%								
Total Plants/Acre (excluding Dead & Seedlings)													'94		0	Dec:		-
													'99		0			-
Chrysothamnus nauseosus																		
S	94	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
M	94	28	-	1	-	-	-	-	-	-	29	-	-	-	580	27	29	29
	99	29	-	-	-	-	-	-	-	-	29	-	-	-	580	34	39	29
D	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	6	-	-	-	-	-	-	-	-	3	-	1	2	120			6
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
% Plants Showing				Moderate Use			Heavy Use			Poor Vigor						%Change		
	'94			00%			03%			00%						+22%		
	'99			00%			00%			07%								
Total Plants/Acre (excluding Dead & Seedlings)													'94		640	Dec:		3%
													'99		820			15%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	94	10	-	-	-	-	-	-	-	-	10	-	-	-	200			10
	99	16	-	-	-	-	-	-	-	-	16	-	-	-	320			16
M	94	104	3	3	-	-	-	-	-	-	110	-	-	-	2200	9	16	110
	99	65	-	-	-	-	-	-	-	-	65	2	-	-	1340	12	16	67
D	94	15	1	-	-	-	-	-	-	-	9	-	-	7	320			16
	99	17	-	-	1	-	-	-	-	-	12	-	-	6	360			18
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	03%	02%	05%	-26%
'99	00%	00%	06%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	2720	Dec:		12%
'99	2020			18%

Cowania mexicana stansburiana																		
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
D	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	1	-	-	-	-	-	-	-	2	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	50%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	0	Dec:		0%
'99	40			100%

Coryphantha vivipara arizonica																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	1	-	-	-	1	-	-	-	20	1	4	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	100%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	0	Dec:		-
'99	20			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Eriogonum corymbosum																		
S	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	94	2	-	5	4	6	-	-	-	-	11	6	-	-	340			17
	99	22	1	-	-	-	-	-	-	-	23	-	-	-	460			23
M	94	22	27	6	20	20	21	-	-	-	116	-	-	-	2320	4	8	116
	99	36	19	9	2	-	3	-	-	-	69	-	-	-	1380	9	16	69
D	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	12	1	-	-	-	-	-	-	-	11	-	-	2	260			13

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	40%	24%	00%	-21%
'99	20%	11%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	2660	Dec:		0%
'99	2100			12%

Gutierrezia sarothrae																		
S	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
Y	94	23	-	-	-	-	-	-	-	-	23	-	-	-	460			23
	99	21	-	-	-	-	-	-	-	-	21	-	-	-	420			21
M	94	186	-	-	1	-	-	-	-	-	187	-	-	-	3740	6	5	187
	99	179	-	1	-	-	-	-	-	-	180	-	-	-	3600	7	7	180
D	94	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	- 6%
'99	00%	.49%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	4280	Dec:		2%
'99	4020			0%

Juniperus osteosperma																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	0	Dec:		-
'99	20			-

Opuntia spp.																		
M	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40	1	2	2
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	+ 0%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	40	Dec:		-
'99	40			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pediocactus simpsonii																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	3	0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40	2	3	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)					
'94	0	Dec:	-		
'99	40		-		

Pinus edulis																		
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	6	-	-	-	-	-	1	-	-	7	-	-	-	140			7
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	13	-	-	-	-	-	-	-	-	12	1	-	-	260			13
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	1	-	1	-	-	-	20	-	-	1
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)					
'94	0	Dec:	-		
'99	280		-		

Ribes spp.																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	26	35	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)					
'94	0	Dec:	-		
'99	0		-		

Symphoricarpos oreophilus																		
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	1	-	-	2	-	-	-	40			2
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	1	-	-	-	-	-	-	-	3	-	-	-	60			3
M	94	5	-	1	-	-	-	-	-	-	6	-	-	-	120	15	23	6
	99	10	-	-	-	-	-	-	-	-	10	-	-	-	200	16	28	10
D	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	1	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	17%	00%	+57%
'99	07%	00%	07%	

Total Plants/Acre (excluding Dead & Seedlings)					
'94	120	Dec:	0%		
'99	280		7%		

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Tetradymia canescens																		
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	99	6	-	-	-	-	-	-	-	-	4	2	-	-	120			6
M	94	20	-	-	2	-	-	-	-	-	21	-	1	-	440	10	17	22
	99	15	-	1	1	-	-	-	-	-	17	-	-	-	340	10	15	17
D	94	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	99	2	1	-	-	3	-	-	-	-	4	-	-	2	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	08%	+10%
'99	14%	03%	07%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	520	Dec:		4%
'99	580			21%

Yucca harrimaniae																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	9	-	-	-	-	-	-	-	-	9	-	-	-	180	13	16	9
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	0	Dec:		-
'99	180			-

Trend Study 25B-5-99

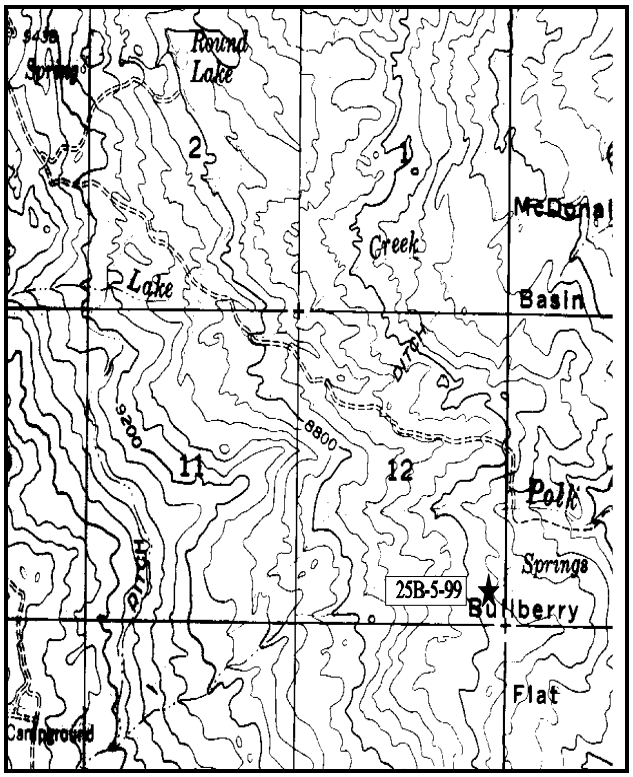
Study site name: Polk Creek . Range type: Mixed Mountain Brush .

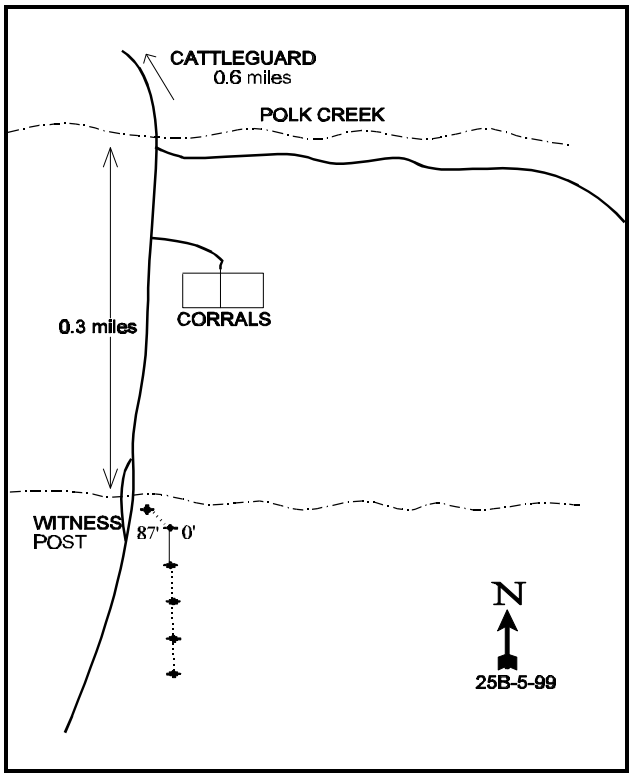
Compass bearing: frequency baseline 165°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11& 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

Travel north from Fremont on SR 72 for 7.3 miles to the Elkhorn-Torrey Road. Turn right and go 2.9 miles to a cattleguard. From the cattleguard go 1.75 miles to an intersection by Heart Lake. Take the right fork (#206) and go 0.4 miles toward Cathedral Valley. At the intersection, turn left (#22) toward Cathedral Valley. Proceed 0.5 miles to another fork (Round Lake turnoff). Stay right and go 2.6 miles to a cattleguard. From the cattleguard, proceed 0.6 miles down to Polk Creek. Immediately after crossing the creek, turn right on the Polk Creek Trail. Go 0.3 miles past a camp and some corrals on your left to another creek. Cross the creek, then look 110 feet beyond the creek (along the left fork of the road) for a steel rebar witness post on the left side of the road. The frequency baseline of the study starts 84 feet east (81°M) of the witness post. The 0-foot baseline stake has a red browse tag #7060 attached.





Map Name: Torrey, Utah Diagrammatic Sketch

Township 27S , Range 4E , Section 12 UTM 4257779.777 N, 463955.104 E

DISCUSSION

Trend Study No. 25B-5 (46-5)

The Polk Creek study is on the east side of Thousand Lake Mountain. The site begins level, then to gently sloping (11%), with a northeast aspect. The range type is mixed mountain brush. Although the site is moderately high at 8,400 feet in elevation and probably above the limits for a severe winter range, it is still utilized fairly heavily by deer in winter. The pellet group transect done in 1999 in conjunction with the sampled baseline, indicated that there was 20 deer days use/acre (49 ddu/ha), 7 cow days use/acre (18 cdu/ha), and less than one elk days use/acre (2 edu/ha). As part of a three pasture, rest-rotation system of the Thousand Lake Cattle Allotment, the Polk Creek unit is grazed the first half of the season one year, the last half of the next season, and rested the third year.

Soil depth is variable, depending on the location on the slope. Effective rooting depth varies from shallow (8-10 inches) and rocky on the slope, to 16-18 inches with good litter cover in the flat (first hundred feet). Overall average effective rooting depth is 11 inches. The soil has a neutral pH (6.8) and a sandy clay loam texture. There is some erosion, especially along washes and trails near the bottom of the slope. There is also movement of rocks and a higher concentration of pavement on the upper portions of the transect.

There is a variety of browse species present (almost 20), however black sagebrush and bitterbrush are the key species by virtue of their numbers and utilization. Together they currently (‘99) make up 76% of the total browse cover. Black sagebrush is the most numerous making up 36% of the browse cover in 1999 with utilization varying from light to moderate. The plants in the flat appeared more vigorous than those on the rocky dry hillside because of the effectiveness of precipitation on the flat versus the steeper slope. The proportion of the population that are mature healthy plants varies from 61% (1994) to 50% (1999). Percent decadency has remained fairly constant from 37% (1985) to a low of 33% (1999). Biotic potential for black sagebrush has varied greatly through time, which is not unusual in unpredictably dry climates. It is currently at 7%, with the percent young age class a 16%. This will easily replace those that are dying within the population.

The bitterbrush population currently (‘99) makes up 38% of the shrub cover and shows good vigor. Percent decadency fluctuates from year to year, but is low now at 10%. The plants show anywhere from light, moderate, and heavy hedging . There was a high number of seedlings (biotic potential) in 1985 which has gone down to only 1% currently (‘99). Bitterbrush on this site are a prostrate form, averaging a little over one-foot in height with a crown of more than three feet. They appear to spread by layering. Other shrub species include broom snakeweed, several species of rabbitbrush, snowberry, gray horsebrush, squawbush, and a few basin big sagebrush. None of these displayed more than light to moderate use and appeared to have stable populations. The pinyon appear to be slowly increasing into the flatter areas.

Grass species show moderate diversity, but only fair forage production, as they only make up 12% (1994) to 17% (1999) of the total cover. The most common grass species are: blue grama, sedge, and bottlebrush squirreltail which could provide some spring-fall forage. Utilization appeared moderate from the recent cattle grazing in 1994. Forbs are fairly common in the bottom and under the protective cover of sagebrush. However, none are very valuable as forage and several are low value increasers. All the forbs together provide little forage and only provide 2% to 5% cover.

1985 APPARENT TREND ASSESSMENT

Aside from the small washes on the flat, the soil appears stable. The bitterbrush population appears to be increasing with a very high percentage of seedlings and young and few decadent plants. The black sagebrush may be slightly decreasing.

1991 TREND ASSESSMENT

There are still signs of soil movement, e.g. loss of pavement cover mostly due to soil movement. There was an increase in vegetative basal cover. The trend for soil is slightly downward at this time. Both key browse species (black sagebrush and bitterbrush) have increased their respective densities. Bitterbrush has almost doubled it's density with a increase in percent decadency from 3 to 36%. Most of the more important grass and forb species have also shown increased numbers.

TREND ASSESSMENT
soil - slightly downward
browse - slightly upward
herbaceous understory - slightly upward

1994 TREND ASSESSMENT

There is continuing signs of some soil movement, especially on the steeper slopes. Percent bare ground has gone down from the reading of 1991 and even slightly lower than that of 1985. Percent litter cover has decreased, as it has throughout the state with the extended drought we have been experiencing. Soil trend is considered stable to slightly improving at this time. There are two key browse species on this site, black sagebrush and bitterbrush. The black sagebrush's trend is up with increased densities, fairly stable rate of decadency, and decreasing use. The bitterbrush density has bounced around somewhat, but this could be partially explained because the plants are an ecotype that can reproduce by layering, which can make counting them difficult. But, those that have been utilized moderately have now decreased to only 2%, while percent decadency has also decreased to only 3%. Browse trend for the key species is up. The herbaceous understory has noted decreases in nested frequency values for both grasses and forbs. Trend for the understory is down.

TREND ASSESSMENT
soil - stable to slightly improving
browse - up
herbaceous understory - down

1999 TREND ASSESSMENT

There is continuing signs of some soil movement, especially on the steeper slopes. Percent bare ground has continued to go down from the reading of 1991. It is now at its lowest value since the study began in 1985. Percent litter cover has increased substantially with increases in precipitation. Soil trend is considered slightly improved at this time. There are two key browse species on this site, black sagebrush and bitterbrush. The black sagebrush's trend is stable, a stable densities, fairly stable rate of decadency, and continuing decrease in use. The bitterbrush density has bounced around somewhat, but this can mostly be explained because the plants are an ecotype that can reproduce by layering, which can make counting their density difficult. But, those that have been utilized moderately has fluctuated from year to year with no notable harm. Browse trend for the key species is stable. The herbaceous understory trend has stabilized. The sum of nested frequency has stabilized, while percent cover for the herbaceous understory has increased with increases in precipitation.

TREND ASSESSMENT
soil - slightly improving
browse - stable
herbaceous understory - stable

HERBACEOUS TRENDS --
Herd unit 25B, Study no: 5

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'85	'91	'94	'99	'85	'91	'94	'99	'94	'99
G	Agropyron smithii	a-	a-	a3	b16	-	-	1	7	.03	.13
G	Bouteloua gracilis	ab106	b105	b102	a72	45	49	46	34	1.81	1.50
G	Carex spp.	b176	b186	a86	a102	58	59	32	38	1.01	3.33
G	Festuca ovina	a-	a-	a-	b9	-	-	-	3	-	.21
G	Poa fendleriana	32	20	35	7	13	6	15	6	.51	.10
G	Sitanion hystrix	cb152	c180	ab113	a99	61	68	44	43	1.26	2.81
G	Sporobolus cryptandrus	a-	a-	b7	a-	-	-	3	-	.04	-
G	Stipa comata	ab7	a5	a7	b32	5	3	4	13	.04	.94
G	Stipa spp.	a-	b18	a-	a-	-	8	-	-	-	-
G	Stipa lettermani	-	-	-	5	-	-	-	2	-	.30
Total for Annual Grasses		0	0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		473	514	353	342	182	193	145	146	4.73	9.34
Total for Grasses		473	514	353	342	182	193	145	146	4.73	9.34
F	Antennaria parvifolia	6	1	3	-	3	1	2	-	.01	-
F	Androsace septentrionalis (a)	-	-	-	1	-	-	-	1	-	.00
F	Arabis demissa	12	11	2	15	6	4	1	5	.00	.17
F	Artemisia ludoviciana	b8	b6	a-	ab1	4	3	-	1	-	.00
F	Astragalus convallarius	b3	a-	a-	a-	3	-	-	-	-	-
F	Aster spp.	a-	b8	a-	ab3	-	3	-	1	-	.00
F	Astragalus spp.	ab4	a-	b7	a-	2	-	3	-	.01	-
F	Castilleja chromosa	-	5	1	-	-	2	1	-	.00	-
F	Chenopodium album (a)	-	-	-	2	-	-	-	1	-	.00
F	Chaenactis douglasii	b6	b5	ab1	a-	3	3	1	-	.00	-
F	Comandra pallida	13	7	16	14	5	2	6	6	.18	.42
F	Cryptantha spp.	a15	a14	b40	a14	6	6	20	9	.32	.07
F	Cymopterus spp.	-	4	-	-	-	2	-	-	-	-
F	Descurainia pinnata (a)	-	-	a-	b9	-	-	-	4	-	.02
F	Eriogonum alatum	-	3	-	7	-	1	-	4	-	.12
F	Eriogonum cernuum (a)	-	-	1	-	-	-	1	-	.00	-
F	Erigeron pumilus	37	15	21	16	14	8	10	8	.10	.11
F	Eriogonum racemosum	24	22	17	28	12	11	9	13	.04	.53
F	Gayophytum ramosissimum (a)	-	-	1	7	-	-	1	3	.00	.06
F	Hymenoxys richardsonii	ab9	a5	b24	b14	6	2	12	5	.41	.45
F	Lepidium spp. (a)	-	-	a-	b8	-	-	-	5	-	.02
F	Lithospermum incisum	-	-	-	-	-	-	-	-	.00	-
F	Lupinus spp.	1	-	-	-	1	-	-	-	-	-
F	Lygodesmia spinosa	c55	cb58	ab32	a24	26	28	17	14	.70	1.16
F	Machaeranthera canescens	a3	ab8	a5	b25	2	5	3	11	.04	.20

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'85	'91	'94	'99	'85	'91	'94	'99	'94	'99
F	Oenothera spp.	-	-	1	-	-	-	1	-	.00	-
F	Penstemon humilis	-	1	3	3	-	1	1	1	.03	.03
F	Phlox longifolia	9	24	10	14	5	11	6	7	.03	.06
F	Polygonum douglasii (a)	-	-	3	1	-	-	2	1	.01	.00
F	Potentilla spp.	-	1	-	-	-	1	-	-	-	-
F	Senecio multilobatus	$_{b}$25	$_{a}$1	$_{a}$1	$_{c}$62	14	1	1	27	.00	1.71
F	Sphaeralcea coccinea	3	-	1	3	1	-	1	1	.03	.03
F	Taraxacum officinale	$_{a}$-	$_{b}$5	$_{a}$-	$_{ab}$3	-	3	-	1	-	.00
F	Tragopogon dubius	-	3	-	3	-	1	-	1	-	.00
F	Unknown forb-perennial	2	-	-	-	1	-	-	-	-	-
F	Zigadenus paniculatus	1	-	-	-	1	-	-	-	-	-
Total for Annual Forbs		0	0	5	28	0	0	4	15	0.01	0.12
Total for Perennial Forbs		236	207	185	249	115	99	95	115	1.94	5.10
Total for Forbs		236	207	190	277	115	99	99	130	1.96	5.23

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 25B, Study no: 5

Type	Species	Strip Frequency '94	Strip Frequency '99	Average Cover % '94	Average Cover % '99
B	Artemisia nova	98	95	15.72	14.35
B	Artemisia tridentata tridentata	0	1	-	-
B	Artemisia tridentata vaseyana	3	9	.53	.84
B	Ceratoides lanata	2	0	.00	-
B	Cercocarpus ledifolius	0	2	-	.00
B	Chrysothamnus depressus	15	15	.12	.15
B	Chrysothamnus nauseosus	9	10	.72	.09
B	Chrysothamnus viscidiflorus lanceolatus	54	46	1.80	1.28
B	Chrysothamnus viscidiflorus viscidiflorus	-	-	-	.15
B	Gutierrezia sarothrae	23	16	.10	.16
B	Juniperus osteosperma	0	2	-	.63
B	Opuntia spp.	4	4	.18	.15
B	Pediocactus simpsonii	0	3	-	.00
B	Pinus edulis	0	13	4.33	5.49
B	Purshia tridentata	47	47	10.00	15.23
B	Rhus trilobata trilobata	0	0	-	-
B	Symphoricarpos oreophilus	5	7	-	.41
B	Tetradymia canescens	20	28	.44	.79
Total for Browse		280	298	33.96	39.76

CANOPY COVER --
Herd unit 25B, Study no: 5

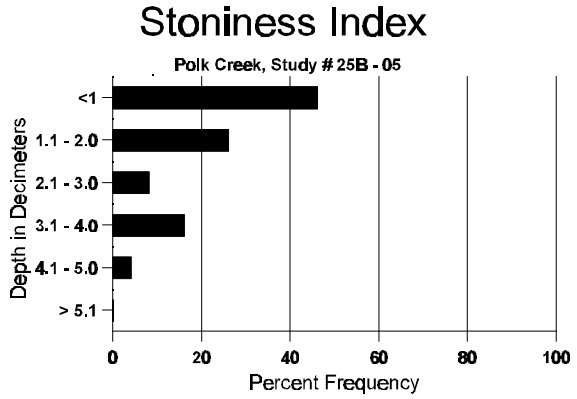
Species	Percent Cover '99
Pinus edulis	5

BASIC COVER --
Herd unit 25B, Study no: 5

Cover Type	Nested Frequency '94	Nested Frequency '99	Average Cover % '85	Average Cover % '91	Average Cover % '94	Average Cover % '99
Vegetation	310	288	8.75	11.00	38.57	48.68
Rock	277	222	4.75	6.25	17.39	18.85
Pavement	293	240	17.25	7.75	9.53	8.58
Litter	369	368	54.25	53.50	30.89	43.84
Cryptogams	6	15	0	.75	.05	.15
Bare Ground	251	204	15.00	20.75	13.78	8.48

SOIL ANALYSIS DATA --
Herd Unit 25B, Study # 05, Study Name: Polk Creek

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
11.2	51.0 (12.3)	6.8	53.8	22.5	23.6	2.2	12.7	198.4	0.5



PELLET GROUP FREQUENCY --
Herd unit 25B, Study no: 5

Type	Quadrat Frequency '94	Quadrat Frequency '99	Pellet Transect Days Use/Acre (ha) '99
Rabbit	23	32	n/a
Elk	7	2	1 (2)
Deer	23	9	20 (49)
Cattle	4	7	7 (17)

BROWSE CHARACTERISTICS --
Herd unit 25B, Study no: 5

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia nova																		
S	85	14	-	-	-	-	-	-	-	-	14	-	-	-	933			14
	91	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	94	243	-	-	13	-	-	-	-	-	256	-	-	-	5120			256
	99	32	-	-	8	-	-	-	-	-	40	-	-	-	800			40
Y	85	7	2	-	-	-	-	-	-	-	9	-	-	-	600			9
	91	15	5	-	1	1	-	2	-	-	22	1	1	-	1600			24
	94	23	-	-	-	-	-	-	-	-	23	-	-	-	460			23
	99	74	-	-	-	-	-	1	-	-	75	-	-	-	1500			75
M	85	19	33	3	-	-	-	-	-	-	53	-	2	-	3666	7	9	55
	91	30	12	2	3	1	-	2	-	-	47	3	-	-	3333	8	14	50
	94	238	16	-	19	5	-	-	-	-	275	3	-	-	5560	10	21	278
	99	143	63	6	17	-	-	1	-	-	230	-	-	-	4600	11	19	230
D	85	7	11	19	-	-	-	-	-	-	25	-	2	10	2466			37
	91	22	13	-	1	1	-	1	-	-	21	3	-	14	2533			38
	94	141	10	-	4	-	-	-	-	-	115	-	-	40	3100			155
	99	102	28	2	21	-	-	-	-	-	102	-	-	51	3060			153
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	600			30
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	2000			100

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	46%	22%	14%	+10%
'91	29%	02%	13%	+18%
'94	07%	00%	09%	+ 0%
'99	20%	02%	11%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	6732	Dec:	37%
	'91	7466		34%
	'94	9120		34%
	'99	9160		33%

Artemisia tridentata tridentata

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	0%
	'91	0		0%
	'94	0		0%
	'99	20		100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	1	-	-	-	-	-	1	-	-	-	66	11	7	1
	94	5	-	-	-	-	-	-	-	-	5	-	-	-	100	21	30	5
	99	8	1	-	-	-	-	-	-	-	9	-	-	-	180	20	27	9
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	-62%
'94	00%	00%	00%	+64%
'99	07%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	0	Dec:		0%
'91	266			75%
'94	100			0%
'99	280			0%

Ceratoides lanata

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60	6	4	3
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'85	0	Dec:	-
'91	0		-
'94	60		-
'99	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus ledifolius																		
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	3	-	1	-	-	-	-	4	-	-	-	80	5	6	4
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'85	00%	00%	00%
'91	00%	00%	00%
'94	00%	00%	00%
'99	20%	80%	00%

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	0%
	'91	0		0%
	'94	0		0%
	'99	100		20%

Chrysothamnus depressus																		
Y	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	91	2	1	-	1	-	-	1	-	-	5	-	-	-	333			5
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	85	15	-	-	-	-	-	-	-	-	15	-	-	-	1000	3	6	15
	91	-	5	4	-	-	-	-	-	-	9	-	-	-	600	3	6	9
	94	9	-	-	10	-	-	2	-	-	21	-	-	-	420	5	10	21
	99	7	5	5	2	-	1	3	-	-	23	-	-	-	460	4	7	23
D	85	5	1	-	-	-	-	-	-	-	5	-	1	-	400			6
	91	2	5	11	1	1	1	3	-	-	20	-	-	4	1600			24
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	05%	00%	05%	
'91	32%	42%	11%	+42%
'94	00%	00%	00%	-83%
'99	21%	25%	00%	+13%

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	1466	Dec:	27%
	'91	2533		63%
	'94	420		0%
	'99	480		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus nauseosus																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	6	-	-	-	-	-	-	-	-	6	-	-	-	120	15	19	6
	99	5	-	1	-	-	-	-	-	-	6	-	-	-	120	22	28	6
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	6	-	-	-	-	-	-	-	-	5	-	-	1	120			6
	99	2	1	-	-	-	-	-	-	-	3	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	08%	- 8%
'99	09%	09%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	0%
	'91	0		0%
	'94	240		50%
	'99	220		27%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus lanceolatus																		
S	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	99	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
Y	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	85	12	-	-	-	-	-	-	-	-	12	-	-	-	800	7	5	12
	91	-	-	-	1	-	-	-	-	-	1	-	-	-	66	4	13	1
	94	89	-	-	9	-	-	-	-	-	98	-	-	-	1960	18	27	98
	99	74	1	-	5	-	-	-	-	-	80	-	-	-	1600	10	15	80
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	99	2	-	-	1	-	-	-	-	-	2	-	-	1	60			3
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	-92%
'91	00%	00%	00%	+97%
'94	00%	00%	00%	-18%
'99	01%	00%	01%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	866	Dec:	0%
	'91	66		0%
	'94	2120		3%
	'99	1740		3%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	99	14	-	-	4	-	-	-	-	-	18	-	-	-	360			18
Y	85	6	-	-	-	-	-	-	-	-	6	-	-	-	400			6
	91	9	-	-	-	-	-	-	-	-	9	-	-	-	600			9
	94	24	-	-	-	-	-	-	-	-	24	-	-	-	480			24
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	85	58	-	-	-	-	-	-	-	-	58	-	-	-	3866	6	4	58
	91	6	3	-	1	-	-	1	-	-	11	-	-	-	733	4	5	11
	94	21	-	-	1	-	-	-	-	-	22	-	-	-	440	5	5	22
	99	27	-	-	-	-	-	-	-	-	27	-	-	-	540	7	8	27
D	85	9	1	-	-	-	-	-	-	-	9	-	1	-	666			10
	91	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	01%	00%	01%	-72%
'91	19%	00%	00%	-34%
'94	00%	00%	00%	-37%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	4932	Dec:	14%
'91	1399		5%
'94	920		0%
'99	580		0%

Juniperus osteosperma																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'85	0	Dec:	-
'91	0		-
'94	0		-
'99	40		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
Y	85	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	2	-	1	-	-	-	-	-	-	3	-	-	-	60			3
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66	1	5	1
	91	-	-	-	3	-	-	2	-	-	5	-	-	-	333	4	5	5
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60	3	6	3
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80	5	16	4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	-17%
'91	00%	00%	00%	-64%
'94	00%	17%	00%	-33%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	399	Dec:	-
	'91	333		-
	'94	120		-
	'99	80		-

Pediocactus simpsonii																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	3	0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'94	0		-
	'99	60		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pinus edulis																		
S	85	4	-	-	-	-	-	-	-	-	4	-	-	-	266			4
	91	2	-	-	-	-	-	3	-	-	5	-	-	-	333			5
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	8	-	-	1	-	-	1	-	-	10	-	-	-	200			10
Y	85	4	-	-	-	-	-	-	-	-	4	-	-	-	266			4
	91	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	8	-	-	1	-	-	-	-	-	9	-	-	-	180			9
M	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66	69	128	1
	91	1	-	-	1	-	-	-	-	-	2	-	-	-	133	81	87	2
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	3	-	-	1	-	-	-	-	-	4	-	-	-	80	-	-	4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	+ 0%
'91	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	332	Dec:	-	
'91	333		-	
'94	0		-	
'99	260		-	

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
S	85	14	-	1	-	-	-	-	-	-	15	-	-	-	1000			15
	91	1	1	-	-	-	-	3	-	-	5	-	-	-	333			5
	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	85	5	5	-	-	-	-	-	-	-	10	-	-	-	666			10
	91	1	2	-	1	-	-	-	-	-	4	-	-	-	266			4
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	3	2	-	-	-	3	-	-	9	-	-	-	180			9
M	85	-	5	12	-	-	-	-	-	-	16	-	1	-	1133	13	41	17
	91	3	1	4	1	9	3	1	3	-	25	-	-	-	1666	7	21	25
	94	116	3	1	2	-	-	-	-	-	122	-	-	-	2440	12	36	122
	99	20	2	3	-	19	26	-	-	4	74	-	-	-	1480	15	43	74
D	85	-	-	1	-	-	-	-	-	-	1	-	-	-	66			1
	91	3	-	1	-	3	2	8	-	-	17	-	-	-	1133			17
	94	1	-	2	1	-	-	-	-	-	4	-	-	-	80			4
	99	2	-	-	1	4	-	2	-	-	3	-	-	6	180			9
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	36%	46%	04%	+39%
'91	33%	22%	00%	-18%
'94	02%	02%	00%	-27%
'99	30%	38%	07%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	1865	Dec:	4%
	'91	3065		37%
	'94	2520		3%
	'99	1840		10%

Rhus trilobata trilobata																		
M	85	-	1	-	-	-	-	-	-	-	1	-	-	-	66	12	20	1
	91	-	-	-	-	1	-	-	-	-	1	-	-	-	66	18	23	1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	100%	00%	00%	+ 0%
'91	100%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	66	Dec:	-
	'91	66		-
	'94	0		-
	'99	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	5	-	-	-	-	-	-	-	-	5	-	-	-	100	13	23	5
	99	4	2	-	-	-	-	-	-	-	7	-	-	-	140	19	26	7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'94	00%	00%	00%	+14%
'99	29%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'94	120		-
	'99	140		-

Tetradymia canescens																		
Y	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	91	-	-	-	1	-	-	-	-	-	1	-	-	-	66			1
	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	6	-	-	1	-	-	-	-	-	7	-	-	-	140			7
M	85	7	-	-	-	-	-	-	-	-	7	-	-	-	466	5	4	7
	91	3	1	-	2	2	-	2	-	-	10	-	-	-	666	7	4	10
	94	16	-	-	4	-	-	-	-	-	20	-	-	-	400	9	11	20
	99	16	3	1	3	-	-	-	-	-	23	-	-	-	460	9	10	23
D	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	91	1	1	-	-	-	-	2	-	-	4	-	-	-	266			4
	94	1	-	-	1	-	-	-	-	-	1	-	-	1	40			2
	99	3	2	-	-	-	-	-	-	-	4	-	-	1	100			5
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	+13%
'91	27%	00%	00%	-52%
'94	00%	00%	04%	+31%
'99	14%	03%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	866	Dec:	23%
	'91	998		27%
	'94	480		8%
	'99	700		14%

Trend Study 25B-6-99

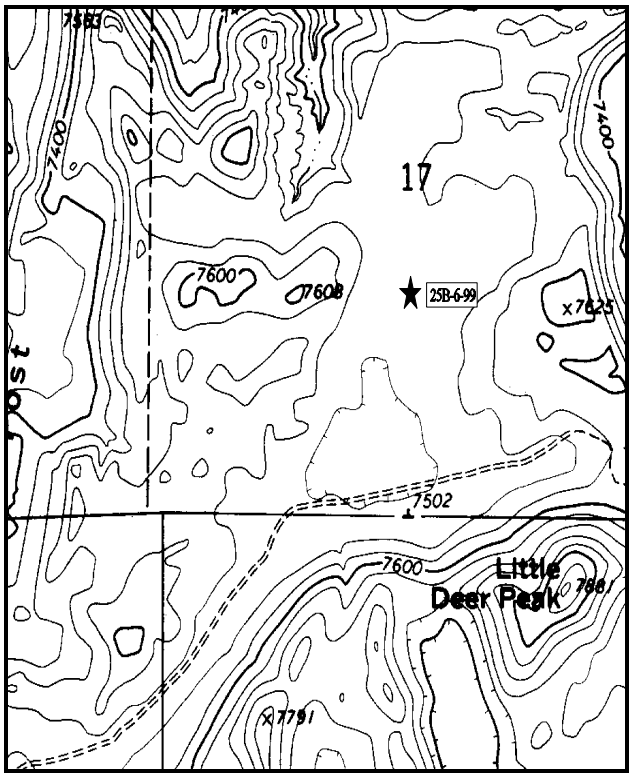
Study site name: Little Deer Peak . Range type: Big Sagebrush-Grass .

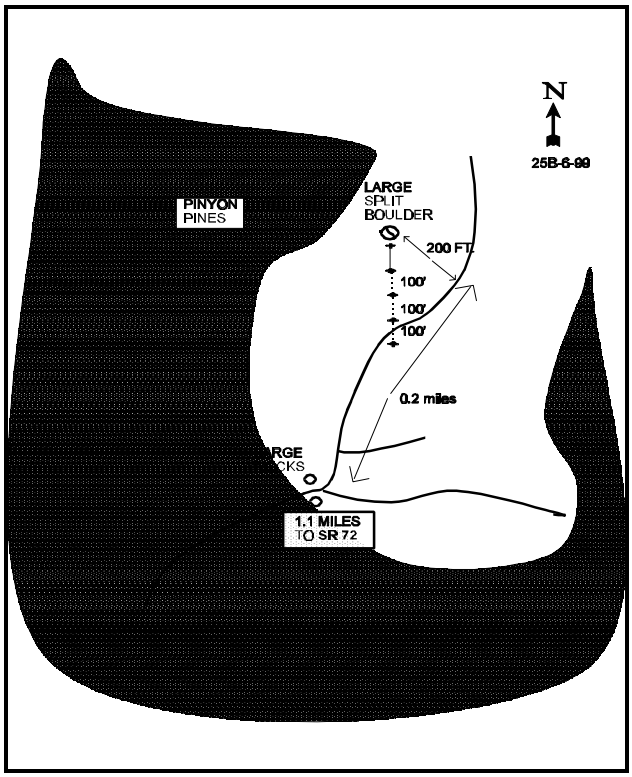
Compass bearing: frequency baseline 160°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From Salina, go 37.5 miles east on I-70 to a rest area. From the rest area, go approximately 3 miles east on the frontage road to Fremont Junction. Turn south on SR 72 and drive 4.1 miles to a left turn across from Frying Pan Flat. Go left down this road for 1.1 miles to a fork between 2 large boulders. Take the left fork 0.05 miles to another fork. Go left 0.2 miles to a large split boulder which is 200 feet to the left of the road. The 0-foot baseline stake is 15 feet south of the split boulder and has a red browse tag #7082 attached.





Map Name: John's Peak, Utah Diagrammatic Sketch

Township 24S , Range 5E , Section 17 UTM 4285555.495 N, 466676.983 E

DISCUSSION

Trend Study No. 25B-6 (45-3)

The Little Deer Peak transect samples a sagebrush flat of about 260 acres that is surrounded by low hills with pinyon-juniper cover. The flat has a slope of a little over 1% and an elevation of 7,560 feet. Range type is Wyoming big sagebrush-grass. Two species of grass make up about 99% of the total grass cover. The BLM grazing allotment is for cattle from March 16 to May 31. Grazing pressure appears to have been heavy in the past, as a warm season grass dominates the area by contributing 84% of the total grass cover. It has not received much use since 1982 and there were no recent signs of livestock or big game use in 1985. No deer pellet groups were found on the study area in 1985, but in 1991 there were 5 deer days use/acre (12 ddu/ha) and 9 elk days use/acre (22 edu/ha) estimated. In 1999, the pellet group transect showed 31 deer days use/acre (76 ddu/ha), 41 elk days use/acre (100 edu/ha), and 7 cow days use/acre (18 cdu/ha). There is good cover on the slopes nearby.

The soil texture is a sandy clay loam with a neutral pH (7.3). Infiltration is poor, as evidenced by the puddles that formed from small amounts of rain which fall on the site. Effective rooting depth is just over 12 inches with little surface rock and pavement cover. Although there is a fair amount of vegetative cover, there is inadequate litter cover. Much of the litter comes from dead sagebrush. Pavement and rock accounts for <10% of the ground cover. Thirty-seven percent of the surface was bare soil in 1985, which increased to 42% in 1991, then went down to 38% in 1999. It appears that the bare interspaces have been subject to soil loss and compaction from trampling. Moderate pedestalling is evident for grasses and shrubs. Many of the large bare areas present are the result of red harvester ant activities. Some areas are denuded of vegetation up to 20 feet in diameter. Grasshoppers were also present in moderately high numbers in 1991. The large patches of blue grama appear to grow on the more clay soils where the soil pentrometer had readings 4-5 inches more shallow. There was a noticeable caliche layer at approximately 12 inches in depth which could be restrictive to plant roots.

Wyoming big sagebrush is the most abundant browse plant, providing 82% of the total browse cover in 1999. The plants are scrubby and stunted and look very similar to black sagebrush in stature. Average size is only 12 inches high with about a 16 to 24 inch crown. Initially in 1985, 21% of the big sagebrush plants had poor vigor with over 42% being heavily hedged. When they were sampled in 1991, these numbers were respectively 6% with poor vigor and 8% heavily hedged. By 1999, those with poor vigor remained at 6%, while those with heavy use decreased to only 2%. Percentage of young plants present in the population has been quite variable through the years, currently it is at 11%. Low rabbitbrush makes up a good proportion of the browse population, however it only makes up 8% of the browse cover. The plants are vigorous and the population appears to be stable at this time. Other increaser species like broom snakeweed are indicators of a disturbed site.

Quadrat frequency and diversity of herbaceous species is low. Two species of grass, blue grama and bottlebrush squirreltail, are fairly common. However, blue grama dominates by providing 84% of the grass cover in 1999. There are a few scattered sedges on site that were not sampled in 1991 or 1999. Scarlet globemallow and low fleabane are the only common forbs and they can not provide much usable forage.

1985 APPARENT TREND ASSESSMENT

The soil trend appears to be stable. Although there is a lot of bare soil exposed, the area is very level and no gullies are present. Vegetative trend appears downward as the Wyoming big sagebrush appears to be declining. There are no desirable species to move in and replace it. The herbaceous species provide little forage and include several species of increasers.

1991 TREND ASSESSMENT

Soil trend would have to be considered slightly downward, not because of increase in soil erosion, but because of the increase in bare soil and decrease in basal plant cover. This could turn around with an increase in precipitation. The key browse species, Wyoming big sagebrush, has lost 47% of its population since 1985. Percent decadency has decreased from 35 to 29%. This would indicate that the initially high densities and the extended drought have thinned out the sagebrush thereby lowering the percentage of the population classified as being in poor vigor from 21% down to only 6%. Low rabbitbrush has more than doubled it's density in the interim. There is very low diversity of species for the grasses and forbs. It has stayed about the same, with some gains and some losses for both groups of plants.

TREND ASSESSMENT
soil - slightly down
browse - down
herbaceous understory - stable, but still very poor condition

1999 TREND ASSESSMENT

Soil trend would be considered stable with a decrease in percent bare ground, but still in poor condition overall. With the sample size for browse being increased by more than three times, the browse density will be changed somewhat. The key browse species, Wyoming big sagebrush, now has a density of 6,200 plants/acre. What is more important to note for changes in trend is that percent decadency has stayed about the same; percent young is still moderately high at 11%; the percentage of the decadent class that were classified as dying has remained almost unchanged since 1985; those classified with poor vigor have gone from 21% and remained stable at 6%; the number of plants with heavy use has decreased from 42% to 8%, now it is only 2%. All these changed characteristics would indicate a slightly improving trend for sagebrush on this site. There is very low diversity of species for the grasses and forbs. It has stayed about the same, with some gains and some losses for both groups of plants.

TREND ASSESSMENT
soil - stable, but poor condition
browse - slightly improving
herbaceous understory - stable, but still very poor condition

HERBACEOUS TRENDS --
Herd unit 25B, Study no: 6

Type	Species	Nested Frequency '85	'91	'99	Quadrat Frequency '85	'91	'99	Average Cover % '99
G	Agropyron cristatum	-	-	-	-	-	-	.00
G	Bouteloua gracilis	a286	b321	a278	96	97	95	14.19
G	Carex spp.	b9	a-	a-	5	-	-	-
G	Oryzopsis hymenoides	a-	b11	a-	-	5	-	-
G	Sitanion hystrix	a92	a115	b188	40	52	77	2.71
Total for Annual Grasses		0	0	0	0	0	0	0
Total for Perennial Grasses		387	447	466	141	154	172	16.92
Total for Grasses		387	447	466	141	154	172	16.92

Type	Species	Nested Frequency '85	'91	'99	Quadrat Frequency '85	'91	'99	Average Cover % '99
F	Arabis spp.	a-	a-	b7	-	-	3	.01
F	Astragalus spp.	b6	a-	a-	3	-	-	-
F	Chaenactis douglasii	1	-	-	1	-	-	-
F	Draba spp. (a)	-	-	1	-	-	1	.00
F	Erigeron pumilus	b33	c50	a8	14	24	4	.07
F	Penstemon comarrhenus	3	-	-	2	-	-	-
F	Penstemon spp.	2	6	2	1	4	1	.00
F	Sphaeralcea coccinea	a105	ab119	b152	46	48	60	1.43
Total for Annual Forbs		0	0	1	0	0	1	0.00
Total for Perennial Forbs		150	175	169	67	76	68	1.52
Total for Forbs		150	175	170	67	76	69	1.52

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 25B, Study no: 6

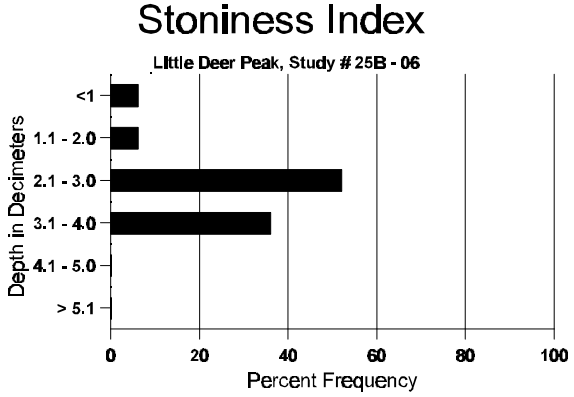
Type	Species	Strip Frequency '99	Average Cover % '99
B	Artemisia frigida	9	.09
B	Artemisia nova	1	-
B	Artemisia tridentata wyomingensis	84	13.93
B	Chrysothamnus viscidiflorus viscidiflorus	62	1.35
B	Echinocereus triglochidatus	4	-
B	Gutierrezia sarothrae	50	1.60
B	Leptodactylon pungens	4	-
B	Opuntia spp.	12	.01
B	Pediocactus simpsonii	2	-
B	Pinus edulis	0	-
Total for Browse		228	17.00

BASIC COVER --
Herd unit 25B, Study no: 6

Cover Type	Nested Frequency ⁞99	Average Cover % '85	'91	'99
Vegetation	321	17.50	14.75	34.75
Rock	91	2.00	2.00	2.86
Pavement	218	13.50	7.25	4.82
Litter	328	29.00	32.25	23.83
Cryptogams	69	1.25	1.75	1.10
Bare Ground	336	36.75	42.00	38.14

SOIL ANALYSIS DATA --
Herd Unit 25B, Study # 06, Study Name: Little Deer Peak

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.5	54.0 (12.5)	7.3	49.8	25.2	24.9	1.4	13.1	153.6	0.5



PELLET GROUP FREQUENCY --
Herd unit 25B, Study no: 6

Type	Quadrat Frequency ⁞99	Pellet Transect Days Use/Acre (ha) ⁞99
Rabbit	41	n/a
Elk	17	41 (101)
Deer	12	31 (77)
Cattle	1	7 (17)

BROWSE CHARACTERISTICS --
Herd unit 25B, Study no: 6

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia frigida																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66	10	10	1
	91	-	-	1	-	-	-	-	-	-	1	-	-	-	66	2	6	1
	99	8	2	2	1	-	-	-	-	-	13	-	-	-	260	5	5	13

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	+ 0%
'91	00%	100%	00%	+78%
'99	13%	13%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	66	Dec:	-
	'91	66		-
	'99	300		-

Artemisia nova																		
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	5	-	-	-	-	-	-	-	-	-	-	-	5	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'99	00%	00%	100%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	0%
	'91	0		0%
	'99	100		100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
S	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	4	-	-	5	-	-	-	-	-	9	-	-	-	180			9
Y	85	3	16	15	-	-	-	-	-	-	32	-	2	-	2266			34
	91	4	-	-	-	-	-	-	-	-	4	-	-	-	266			4
	99	26	8	-	-	-	-	-	-	-	33	1	-	-	680			34
M	85	14	18	28	-	-	-	-	-	-	50	6	4	-	4000	10	15	60
	91	30	10	3	5	-	-	3	-	-	50	1	-	-	3400	10	16	51
	99	100	76	6	-	-	-	-	-	-	179	3	-	-	3640	12	24	182
D	85	2	31	17	-	-	-	-	-	-	26	-	14	10	3333			50
	91	12	5	3	2	-	-	-	-	-	17	-	-	5	1466			22
	99	65	26	-	3	-	-	-	-	-	75	-	-	19	1880			94
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	1020			51

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	45%	42%	21%	-47%
'91	19%	08%	06%	+17%
'99	35%	02%	06%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	9599	Dec:		35%
'91	5132			29%
'99	6200			30%

Chrysothamnus viscidiflorus viscidiflorus																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	85	21	2	-	-	-	-	-	-	-	23	-	-	-	1533			23
	91	23	3	-	1	-	-	2	-	-	29	-	-	-	1933			29
	99	12	-	-	-	-	-	-	-	-	12	-	-	-	240			12
M	85	44	1	-	-	-	-	-	-	-	45	-	-	-	3000	9	10	45
	91	27	21	6	6	-	-	12	-	-	72	-	-	-	4800	3	6	72
	99	144	4	-	3	-	-	-	-	-	146	-	5	-	3020	6	10	151
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	2	4	4	2	-	-	3	-	-	10	1	-	4	1000			15
	99	9	4	-	1	-	-	-	-	-	7	-	-	7	280			14

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	04%	00%	00%	+41%
'91	24%	09%	03%	-54%
'99	05%	00%	07%	

Total Plants/Acre (excluding Dead & Seedlings)				
'85	4533	Dec:		0%
'91	7733			13%
'99	3540			8%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Echinocereus triglochidatus																		
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80	1	3	4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'85	00%	00%	00%
'91	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
'85	0	Dec:		-
'91	0			-
'99	100			-

Gutierrezia sarothrae																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	17	-	-	-	-	-	-	-	-	17	-	-	-	340			17
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	8	1	-	-	-	-	-	-	-	9	-	-	-	180			9
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	137	-	-	1	-	-	-	-	-	138	-	-	-	2760	6	9	138
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'85	00%	00%	00%
'91	00%	00%	00%
'99	.68%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)			
'85	0	Dec:	-
'91	0		-
'99	2940		-

Leptodactylon pungens																		
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60	5	7	3
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'85	00%	00%	00%
'91	00%	00%	00%
'99	00%	00%	25%

%Change

Total Plants/Acre (excluding Dead & Seedlings)			
'85	0	Dec:	0%
'91	0		0%
'99	80		25%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200	5	7	3
	91	-	-	-	-	-	-	2	-	-	2	-	-	-	133	2	9	2
	99	15	-	-	-	-	-	1	-	-	15	-	-	1	320	3	9	16
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	-34%
'91	00%	00%	00%	+65%
'99	00%	00%	11%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	200	Dec:	0%
	'91	133		0%
	'99	380		5%

Pediocactus simpsonii

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	3	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'99	40		-

Pinus edulis

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	1	-	-	1	-	-	-	66			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'85	00%	00%	00%	
'91	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'85	0	Dec:	-
	'91	0		-
	'99	0		-

SUMMARY

WILDLIFE MANAGEMENT UNIT 25B (46) - THOUSAND LAKE

The extended drought has continued to effect soil and range conditions on a state-wide basis through the 1994 readings. With the 1999 data, vegetative cover has generally increased, but litter cover has been slow to recover from the low values of 1994. Soil trends are stable on 4 of the 6 sites and up slightly at Horse Valley (#25B-2) and Polk Creek (#25B-5). Even with stable soil trends soil conditions at Horse Valley, Sage Flat (#25B-3), and Little Deer Peak (#25B-6) are considered poor. Percent bare ground is 30% or greater on three sites, Sage Flat, Solomon Basin (#25B-4), and Little Deer Peak. Browse trends are stable on all sites except for a slightly upward trend at Little Deer Peak. All sites on this unit were classified as stable for the herbaceous understory trend except for Solomon Basin which displays a slightly downward trend. Even though most sites are showing stable trends for herbaceous species, many of the sites would have to be considered in poor condition because of the low frequencies and low diversity of species on these sites.

Site	Category	1991	1994	1999
25B-1 Thousand Lake	soil	0	NR	0
	browse	+	NR	0
	herbaceous understory	0/+	NR	0
25B-2 Horse Valley	soil	-	0	+
	browse	-	-	0
	herbaceous understory	0	-	0
25B-3 Sage Flat	soil	-	-	0
	browse	+	+	0
	herbaceous understory	+	0	0
25B-4 Solomon Basin	soil	NR	NR	0
	browse	NR	NR	0
	herbaceous understory	NR	NR	-
25B-5 Polk Creek	soil	-	0/+	+
	browse	+	+	0
	herbaceous understory	+	-	0
25B-6 Little Deer Creek	soil	-	NR	0
	browse	-	NR	+
	herbaceous understory	0	NR	0

(+) upward trend, (-) downward trend, (0) stable trend, (0/-) stable to slightly down trend, (0/+) stable to slightly upward trend, (NR) not read